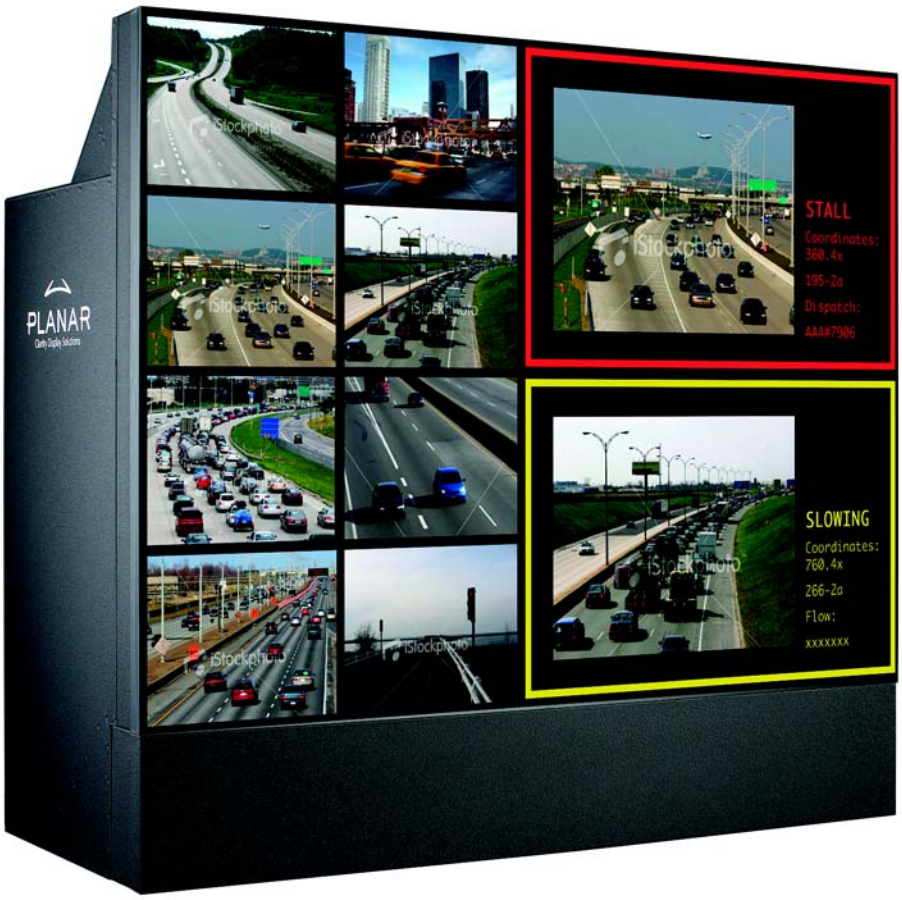
c50RP/c67RP, c50RX/c67RX Installation & Configuration Guide



PLANAR

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RoHS Compliance Statement The c50/67Rs are fully RoHS compliant.

Part Number: 020-0628-00A

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Introduction

The c50RP/c67RP, c50RX/c67RX is a family of digital monitors with a 50" (c50RP or c50RX) or 67" (c67RP or c67RX) diagonal screen size. The c50RP/c67RP is an SXGA+ format, with a 1400 x 1050 pixels resolution. The c50RX/c67RX is an XGA format, with a 1024 x 768 pixels resolution. The displays can be configured in arrays up to two units high without additional support, and any number of units wide, which makes them ideal for many command/control room and digital signage applications. For broadcast applications, the optional Video Input Module includes the following:

- Composite (NTSC, PAL or SECAM)
- S-Video (NTSC and PAL, at 50Hz or 60 Hz)
- Component (480i, 480p, 576i, 576p, 720p, 1080i)
- SDI (Serial digital interface inputs from 480i to 1080p)

Although the RP and RX versions of the 50" and 67" displays are very similar, there are differences. These will be noted when applicable. Unless there are specific differences to address, the displays will be referred to as the c50/67R throughout this manual.

Safety for You and the c50RP/c67RP, c50RX/c67RX

This list of safety warnings and cautions notes isn't very long. Reading it could save you from getting an electric shock.

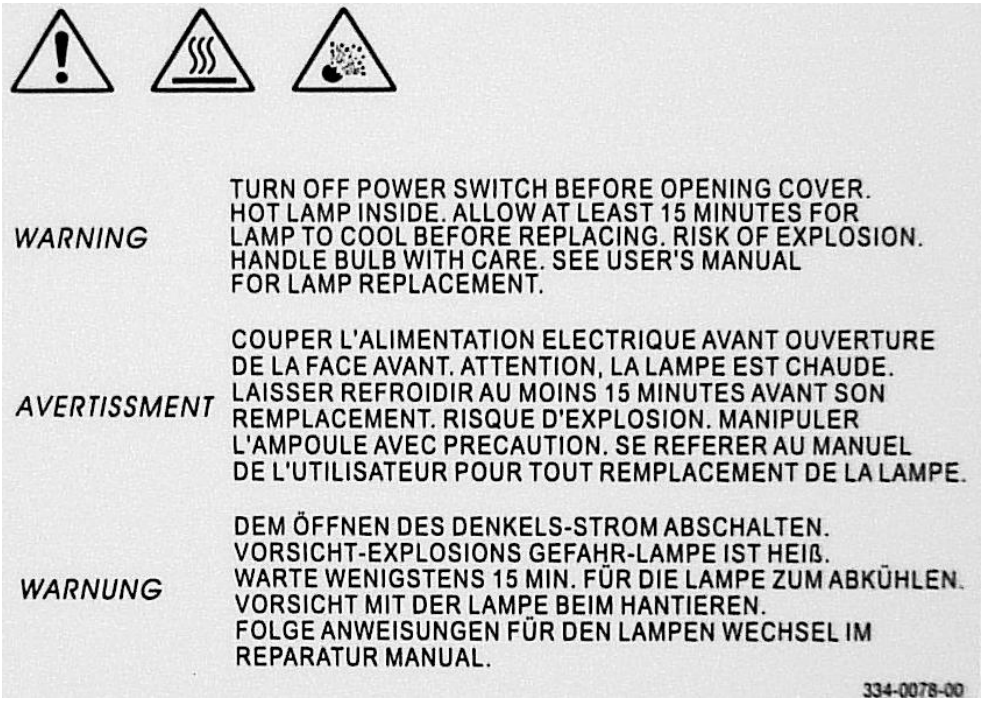
The c50/67R sometimes contains very high voltages. It produces UV (ultra-violet) radiation, and some parts are very hot. **Your physical health and safety are important**. Take a few minutes to read this section at least once.

Fully assembled, the c50RP/c50RX display weighs about 85lbs. The c67RP/c67RX weighs about 124lbs. When assembling a wall, you will need at least two people.

- The lamps need very high voltages to ignite, around **15,000 volts**.
- The lamps produce a lot of light and **UV radiation** as well. UV light can damage your retinas. After the light leaves the lamps and passes through the optical engine, there is no more UV.
- There are no electrical interlocks on the display. Opening the screen or removing the rear panel does *not* turn off the high voltage to the lamps.

Note: The plug on the power cord serves as the disconnect for this product. No user serviceable parts are inside. All parts replacement is done at the module level by a qualified service technician.

This display was designed with safety in mind. However, if you don't heed the safety warnings and cautions, you could get hurt. The safety warnings are on stickers in various places in and on the display. They are reproduced on these pages so you can see them all at once.


WARNING
TURN OFF POWER SWITCH BEFORE OPENING COVER. HOT LAMP INSIDE. ALLOW AT LEAST 15 MINUTES FOR LAMP TO COOL BEFORE REPLACING. RISK OF EXPLOSION. HANDLE BULB WITH CARE. SEE USER'S MANUAL FOR LAMP REPLACEMENT.
AVERTISSMENT
COUPER L'ALIMENTATION ELECTRIQUE AVANT OUVERTURE DE LA FACE AVANT. ATTENTION, LA LAMPE EST CHAUDE. LAISSER REFROIDIR AU MOINS 15 MINUTES AVANT SON REMPLACEMENT. RISQUE D'EXPLOSION. MANIPULER L'AMPOULE AVEC PRECAUTION. SE REFERER AU MANUEL DE L'UTILISATEUR POUR TOUT REMPLACEMENT DE LA LAMPE.
WARNUNG
DEM ÖFFNEN DES DENKELS-STROM ABSCHALTEN. VORSICHT-EXPLOSIONS GEFAHR-LAMPE IST HEIß. WARTE WENIGSTENS 15 MIN. FÜR DIE LAMPE ZUM ABKÜHLEN. VORSICHT MIT DER LAMPE BEIM HANTIEREN. FOLGE ANWEISUNGEN FÜR DEN LAMPEN WECHSEL IM REPARATUR MANUAL.
334-0078-00

WARNING
High intensity light.
Do not look into the projection lens while unit is on.
WARNING
Possible UV Exposure
Use protective eye wear while operating with screen removed.
334-0077-00

WARNING
ATTENTION
Hazardous voltage inside. Can shock, burn or cause death.
Présence de hautes tensions à l'intérieur. Risques d'électrocution, de brûlure et de mort.
Disconnect power cord before servicing this unit.
Refer to service manual for details.
No user serviceable parts inside. Refer all service to qualified serviceman.
Débranchez le câble d'alimentation secteur avant toute action de maintenance.
Consultez le manuel utilisateur pour plus d'informations.
N'ouvrez pas le châssis.
Seul le personnel qualifié peut effectuer la maintenance de cet appareil.
334-0198-00

Hg Lamp(s) inside this product contain mercury. This product may contain other electronic waste that can be hazardous if not disposed of properly. Recycle or dispose in accordance with local, state, or federal Laws. For more information, contact the Electronic Industries Alliance at www.eiae.org. For lamp specific disposal information, check www.lamprecycle.org.

European Union Disposal Information

English

☐ Disposal of old Electrical & Electronic Equipment (Applicable throughout the European Union and other European countries with separate collection programs)

This symbol found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources.

This symbol is only valid in the European Union. If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

Français

☐ Mise au rebut des équipements électriques et électroniques usagés (Valable dans l'ensemble de l'Union Européenne ainsi que dans les pays européens disposant de programmes distincts de collecte des déchets)

Ce symbole appliqué sur votre produit ou sur son emballage indique que ce produit ne doit pas être traité comme un déchet ménager lorsque vous voulez le mettre au rebut. Il doit au contraire être remis à un site de collecte agréé pour le recyclage des équipements électriques et électroniques. En veillant à ce que ce produit soit mis au rebut de façon adéquate, vous contribuerez à prévenir les conséquences potentiellement négatives sur l'environnement et sur la santé humaine qui risqueraient de se produire en cas de mise au rebut inappropriée de ce produit. Le recyclage des matériaux contribuera également à économiser les ressources naturelles.

Ce symbole n'est valable que dans l'Union Européenne. Si vous souhaitez mettre ce produit au rebut, veuillez prendre contact avec les autorités locales ou avec votre revendeur et renseignez-vous sur la méthode de mise au rebut correcte.

Deutsch

☐ Entsorgung von elektrischen & elektronischen Altgeräten (geltend für die europäische Gemeinschaft und andere europäische Länder mit separaten Sammelprogrammen)

Dieses Symbol, zu finden auf Ihrem Produkt oder dessen Verpackung, macht Sie darauf aufmerksam, dass dieses Produkt bei der Entsorgung nicht als Hausmüll behandelt werden darf. Statt dessen sollte es an einer Sammelstelle zum Recycling von elektrischen und elektronischen Altgeräten gegeben werden. Helfen Sie mit, potenziell schädliche Einflüsse auf Umwelt und Gesundheit, die durch eine unsachgemäße Entsorgung dieses Produktes entstehen können, zu vermeiden und entsorgen Sie dieses Produkt ordnungsgemäß. Recycling hilft, natürliche Rohstoffe einzusparen.

Dieses Symbol ist nur innerhalb der europäischen Gemeinschaft gültig.
Wenn Sie dieses Produkt entsorgen möchten, wenden Sie sich bitte an Ihre örtliche Behörde und fragen Sie nach der ordnungsgemäßen Entsorgungsmethode.

Español

☐ Deshecho de equipos eléctricos y electrónicos (aplicable a la Unión Europea y a otros países europeos con programas de reciclaje independientes)

La presencia de este símbolo en el propio producto o en su material de embalaje, indica que no se debe tratar como residuo doméstico cuando desee deshacerse de él. En su lugar, debe entregarlo en el punto limpio correspondiente de reciclaje de equipos eléctricos y electrónicos. Asegurándose de que este producto se deseche de forma correcta, ayudará a evitar posibles consecuencias negativas para la conservación del medioambiente y la salud humana, consecuencias que podrían darse si se deshace del producto de forma inadecuada. El reciclado de materiales ayuda a conservar los recursos naturales.

Este símbolo solamente es válido en la Unión Europea.
Si desea deshacerse de este producto, póngase en contacto con las autoridades locales o con su distribuidor y pida información sobre el método de disposición adecuado.

Italiano

☐ Smaltimento delle attrezzature elettriche ed elettroniche usate (applicabile in tutta la Comunità Europea ed altri Paesi Europei che applicano programmi di raccolta differenziata)

Il simbolo trovato sul prodotto, o sulla sua confezione, indica che il prodotto non può essere trattato come i domestici quando è il momento di smaltirlo. Al contrario, deve essere consegnato ad un centro di raccolta specializzato nel riciclaggio di attrezzature elettriche ed elettroniche. Assicurando che il corretto smaltimento di questo prodotto, si aiuterà a prevenire potenziali conseguenze negative sull'ambiente e sulla salute umana, che possono essere provocate da uno scorretto smaltimento di questa attrezzatura. I materiali riciclati aiuteranno a conservare le risorse naturali.

Questo simbolo è valido solo nell'Unione Europea.
Per smaltire questo prodotto, mettersi in contatto con le autorità locali – o con il rivenditore – e chiedere informazioni sul corretto metodo di smaltimento.

Nederlands

☐ Verwijderen van oude elektrische en elektronische apparatuur (toepasselijk in de volledige Europese Unie en andere Europese landen met afzonderlijke programma's voor afvalverzameling)

Dit symbool dat op het product of zijn verpakking is aangebracht, geeft aan dat dit product niet mag worden behandeld als huishoudelijk afval als u het wilt wegwerpen. U moet het afgeven bij een specifiek verzamelpunt voor de recyclage van elektrische en elektronische apparatuur. Door te garanderen dat u dit product op de correcte manier wegwerpt, helpt u potentiële negatieve gevolgen voor het milieu en de menselijke gezondheid, die zouden kunnen worden veroorzaakt door een onrechtmatig wegwerpen van het product, te voorkomen. De recyclage van materialen helpt het behoud van natuurlijke bronnen.

Dit symbool is alleen geldig in de Europese Unie.
Als u dit product wenst weg te gooien, dient u contact op te nemen met uw lokale instanties voor details over de gepaste methode voor afvalverwijdering.

Português

- Eliminação de equipamentos eléctricos e electrónicos usados (aplicável na União Europeia e noutros países europeus com programas próprios de recolha destes equipamentos)

  Este símbolo, colocado no produto ou na respectiva embalagem, indica que o produto não deve ser tratado como lixo doméstico aquando da sua eliminação. Em vez disso, deve ser entregue num ponto de recolha de equipamentos eléctricos e electrónicos para posterior reciclagem. Ao garantir a correcta eliminação deste produto, estará a evitar consequências potencialmente negativas tanto para o ambiente como para a saúde humana. A reciclagem de materiais ajuda a preservar os recursos naturais.

Este símbolo apenas é válido na União Europeia.
Se quiser eliminar este produto, contacte as entidades locais ou o seu fornecedor para ficar a saber qual o método de eliminação correcto.

Polski

- Usuwanie zużytego sprzętu elektrycznego i elektronicznego (Dotyczy krajów Unii Europejskiej i innych krajów europejskich z oddzielnymi programami zbiórki odpadów)

  Obecność tego symbolu na produkcie lub na opakowaniu z produktem oznacza, że tego produktu nie można wyrzucać razem z odpadkami domowymi. Należy go przekazać do punktu zbiórki w celu poddania recyklingowi podzespołów elektrycznych i elektronicznych. Usunięcie tego produktu w prawidłowy sposób, pomoże w zabezpieczeniu przed negatywnym wpływem odpadów na środowisko i zdrowie ludzi, powodowanym przez niewłaściwe usuwanie produktu. Przetwarzanie materiałów pomaga w zachowaniu zasobów naturalnych.

Ten symbol obowiązuje wyłącznie w krajach Unii Europejskiej.
Informacje dotyczące prawidłowej metody usunięcia tego produktu, można uzyskać u władz lokalnych lub u dostawcy.

Svenska

- Avfall av förbrukad elektrisk och elektronisk utrustning (Tillämpbart i hela Europeiska unionen och andra europeiska länder med separata samlingsprogram)

  Den här symbolen som finns på din product eller på dess förpackning påvisar att produkten inte ska behandlas som hushållsavfall när du vill slänga bort den. Istället ska den lämnas över till en lämplig uppsamlingspunkt för återvinning av elektriska och elektroniska utrustningar. Genom att tillförsäkra att den här produkten återvinns på ett riktigt sätt hjälper du till med att förhindra möjliga negative konsekvenser för miljön och mänsklig hälsa. Det kan annars orsakas på grund av olämplig sophantering av den här produkten. Återvinning av material kommer att hjälpa till att bevara naturtillgångar.

Den här symbolen är endast giltig inom den Europeiska unionen.
Om du vill slänga bort den här produkten ska du kontakta lokala myndigheter eller återförsäljar, och fråga efter lämplig avfallsmetod.

Suomi

- Vanhojen sähkö- ja elektroniikkalaitteiden hävittäminen (Soveltuva kaikkialla Euroopan unionin alueella, sekä muissa Euroopan maissa, joilla on erilliset keräysohjelmat)

  Jos tuotteessa tai sen pakkauksessa on tämä symboli, sitä ei pidä hävitettäessä käsitellä tavallisena kotitalousjätteenä, vaan se kuuluu toimittaa sähkö- ja elektroniikkalaitteiden kierrätyspisteeseen. Varmistamalla, että tämä tuote hävitetään asiaankuuluvalla tavalla autat estämään mahdollisia ympäristölle ja ihmisille koituvia negatiivisia seuraamuksia, joita sen vääränlainen hävittäminen voi aiheuttaa. Materiaalien kierrättäminen auttaa säilyttämään luonnonvaroja.

Tämä symboli on voimassa ainoastaan Euroopan unionin alueella.
Jos haluat hävittää tämän tuotteen, ota yhteyttä paikallisiin viranomaisiin tai jälleenmyyjään ja tiedustele asiaankuuluvia hävittämistoimenpiteitä.

RoHS Compliance

The RoHS directive restricts the use of certain hazardous substances in electrical and electronic equipment in the European Union. The c50RP/c67RP, c50RX/c67RX is RoHS compliant.

Installing a c50/67R

This section explains how to install a c50/67R, either one alone, or a wall of displays. We suggest that you read the entire section before you attempt to install the units.

Before You Begin

Make sure you have all the items in these checklists before you begin unpacking and installing your c50/67R(s).

Plan Your Installation

You should have a detailed plan of how the units are to be configured. The plan should include calculations for the following:

- Floor load
- If you have a wall of three or more, tie back upper units to a wall or other building structure to prevent tipping
- Power (maximum of six units per 20A circuit for 115V operation)
- Access to assembled units
- Space allowance behind units for rear service access (recommended but not required)
- Cable runs
- Ventilation and cooling requirements (this is most important)

Note: For zero or limited rear clearance installations: to install the top row, you must allow an additional 10" (254mm) or more clearance above the top row to put the top units up and over the previous row.

Prepare Your Installation Location

You should have prepared the area where you will install the units. If custom enclosures are part of the installation they must be fully designed to accommodate the installed units and their ventilation and cooling requirements.

About Aligning Units

The purpose of aligning units in a wall is to ensure that the screens are all in the same plane. When the screens are in the same plane, the image is less likely to be distorted from screen to screen, and opening and closing the screens will be easier because the screen frames won't scrape or bang into each other.

The easiest way to get the screens in one plane is to ensure that the units are plumb, aligned and square as you assemble them in rows. How easily you arrive at plumb, aligned and square depends largely on patience, tools and procedures.

We cannot advise you on patience, but we can suggest some tools and procedures.

Tools and Other Things You May Need

- Tools:
  - String, to check the straightness across the fronts of the units
  - Long carpenter's level; 48" or longer if possible
  - Steel tape measure; to check the squareness of the wall
  - #2 Phillips screwdriver with a long shaft, 8" (203mm) or more.
  - Utility knife to cut shrink wrap
- Computer network LAN cables (straight through - no crossover) to interconnect multiple displays for RS232 control, one cable for each display
- #50 Glass Cleaner (www.clairemfg.com or www.spraywayinc.com)
- Service Manual. A service manual is or will be available for download from www.planar.com. (For information about downloading manuals, see "Accessing Planar's Technical Support Website" on page 141.)
- At least two people to help lift units into place

After You Open the Shipping Container

Use the following instructions after the display is out of the shipping container and before you put it in a wall.

1. Remove the optical engine shipping screws (and save them). See "Releasing the Optical Engine" on page 13.

2. Install the Option key, if this was ordered. See "Installing the Option Key" on page 15. The Option key allows the display to:
   a. show one picture over a whole wall without using an external video processor
   b. use the ACB (Auto Color Balance) feature when one WallNet device server is installed in one of the displays
   c. both a and b above

3. Install the VIM (Video input Module), if this was ordered. See "Installing the Video Input Module (VIM)" on page 17. The VIM allows video and SDI inputs.

Unpacking and Checking Accessories

Unpacking the c50/67R

Keep the screens in their separate boxes until needed.

All the c50/67R chassis are shipped on pallets by themselves, and screens are grouped together on one or more separate pallets.

Note: With either shipping method, **leave the screens in their cartons until they are needed**.

Accessories With ***Each*** c50/67R Display

Quick Start Guide

The Quick Start Guide provides the basic setup needed to get the c50/67R up and running. It does not contain the detailed information that is included in this manual.

Remote Control

The batteries are already installed.

Power Cord

For use in North America.

VGA Cable

15-pin cable for analog computer pictures (although this is called a VGA cable, it carries anything up to UXGA).

DVI Cable

We ship a DVI-D cable.

Note: Although VGA and DVI cables are included with every unit, you may wish to obtain a long-run VGA or DVI cable if your source is located far away from the display(s).

Plastic Spacers

These are used between the rows of chassis in a wall when the wall will have front access. For rear access only applications, they are not used.

Screws

M8 x 8mm flathead Phillips screws (for screen brackets).

Suction Cup

This tool is used to open the screen after the wall is built, particularly screens in the middle of the wall where you cannot grab the edges.

Accessories With ***Each Order*** of c50/67R Displays

The number of **screen brackets** included in an order of c50/67Rs depend on the size of the proposed video wall. A wall 2 high by 4 wide requires a different set of brackets than a wall 4 high by 3 wide. The number of brackets required for your planned wall are all packed in a separate accessory kit. Front brackets have alignment pins. Rear brackets do not.

Center Screen Bracket

This large plate with eight holes holds four displays together where they meet and is used on the front and rear of units to hold them together.

Corner Screen Bracket (Front or Rear)

This bracket is used at all four corners of all arrays and stand-alone installations. A front bracket has a pin, a rear bracket does not.

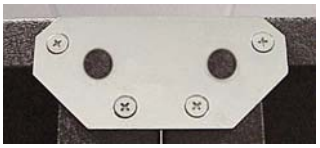
Front corner bracket shown

Side-Top-Bottom Front Screen Bracket

This bracket, which has four holes and two screen alignment pins, holds two displays together at the top and bottom of a column and at the sides between rows.

Side-Top-Bottom Rear Screen Bracket

This bracket keeps units aligned and prevent chassis flex. It is also used for added strength in tie back applications.



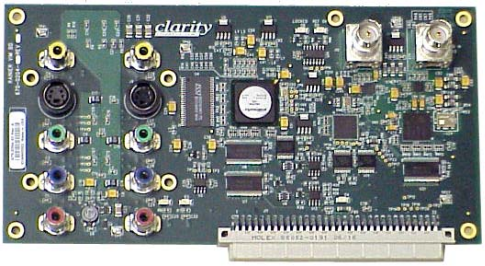
Screen Support

The screen support is to be installed on the bottom row of each cube, unless a customer-supplied stand is used.

Optional Accessories

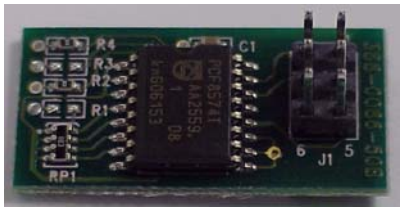
VIM, Video Input Module

For component, composite, S-Video and SDI sources. This ships separately and is installed on site.



Option Key

Contains Big Picture and/or Set it and Forget it™ (SiFi). The SiFi feature includes Auto Color Balance (ACB) and the dual lamp scheduling feature. The Big Picture lets you spread one picture over the whole wall, or over part of it. SiFi allows you to automatically adjust color balance over a whole wall of displays. It also allows you to configure settings for automatic lamp switching. The Option key ships separately and is installed on site.



WallNet

Is a system of hardware and software that displays information about a wall of displays on a network browser. It is primarily used for monitoring, reporting and some control (for example, powering displays on and off). WallNet is required for Auto Color Balance.

Customer-Supplied Accessories

Make sure you have the following customer-supplied items as needed to complete your installation:

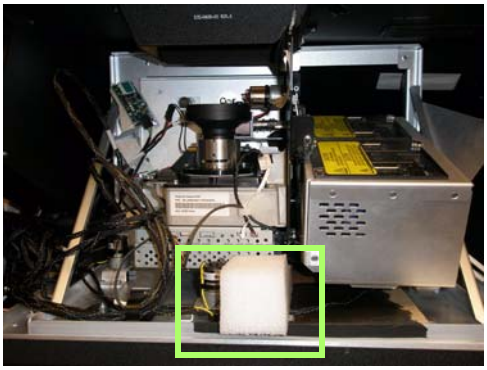
- RJ45 to 9-pin adapter, if you will use RS232 commands to control the display
- RJ45 cable, computer network type
  - Component video cables
  - S-video cables
  - Shims to level the bottom of the displays

Releasing the Optical Engine

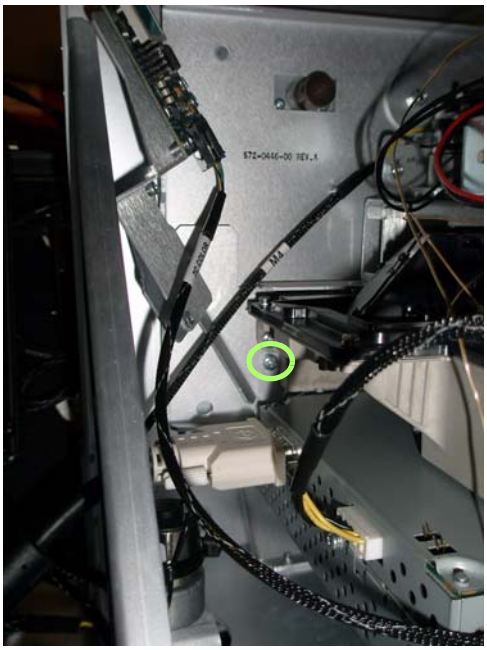
The c50/67R is shipped with the optical engine in a locked-down position. You must release it before you can align the image to the screen. You normally do this *before* you install the c50/67R in a wall.

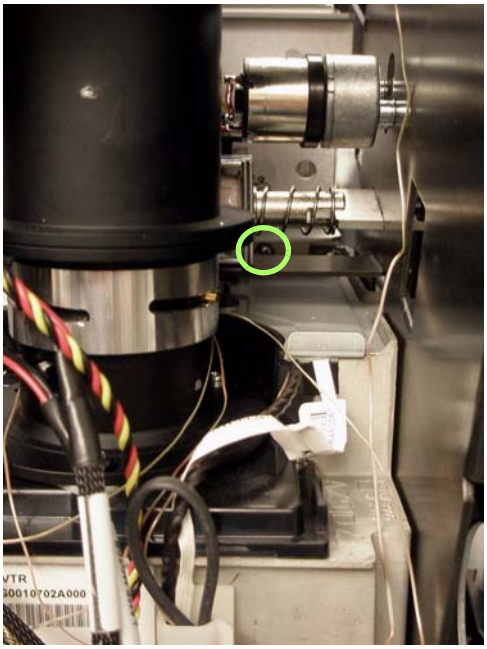
1. From the rear, remove the back panel.

2. Remove the shipping foam from the back of the unit, starting with the large piece first and then the small wedge.

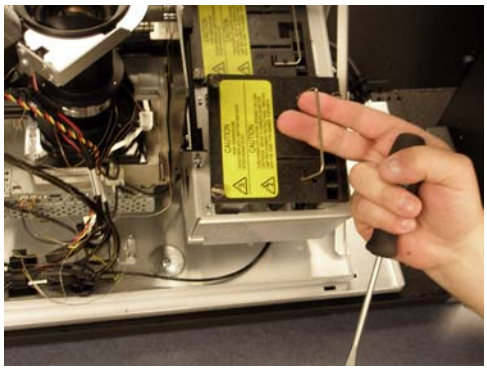


3. Using a Phillips #2 screwdriver, remove two M4 x 16mm keystone screws and washers.

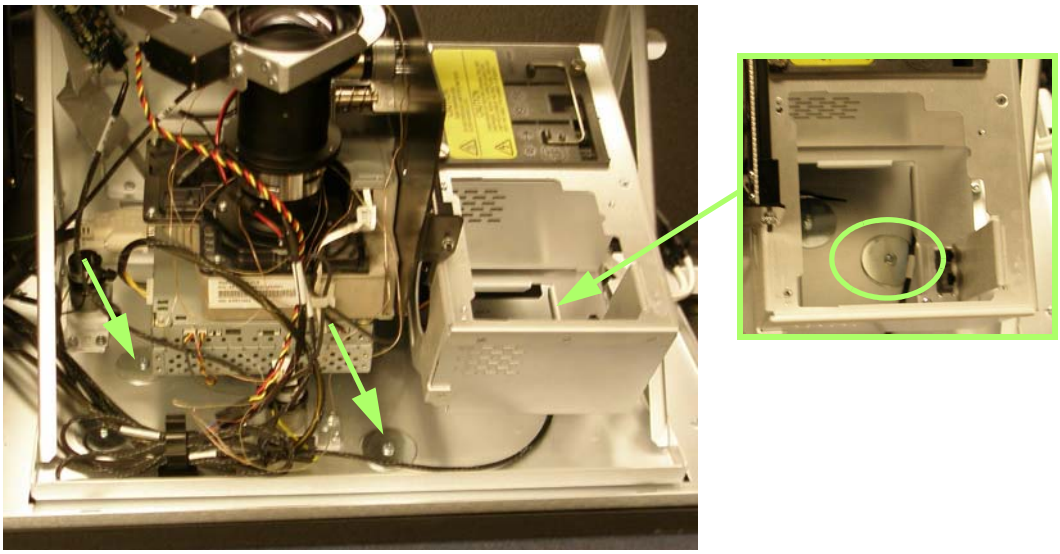




4 To gain access to the area below the rear lamp, remove the lamp.



5 Remove three M4 x 8mm screws and fender washers.



6 Replace the rear lamp.

7 Replace the back panel.

Installing the Option Key

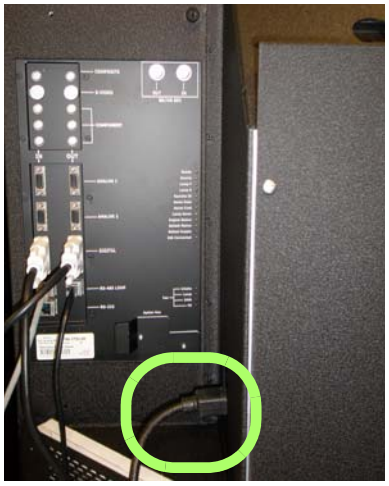
The Option key for Planar's Big Picture™ and/or for ACB (Auto Color Balance) is shipped separately and installed on site. The Option key can be installed without removing the control board.

1 Attach a ground strap to your wrist and the chassis.

WARNING! Failure to properly use a grounding strap can destroy sensitive electronic components in the control board.

2 Turn off the power on the c50RP/c67RP, c50RX/c67RX and remove the power cord.

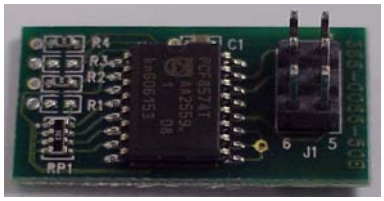
WARNING! Always turn off power and remove the power cord when adding or removing an electronic part.

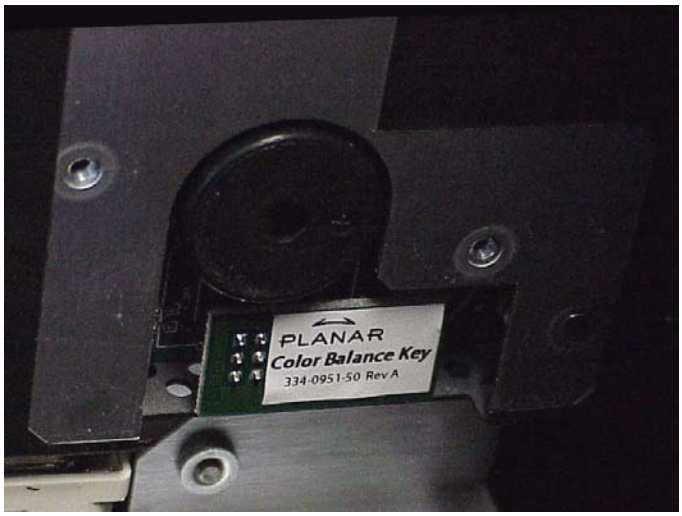


3 Remove the two screws and the small plate on the bottom of the control board.

4 Remove the Option key from its shipping pouch and anti-static bag. Be sure you are grounded.

5 The Option key has six pins. Plug the key into the socket on the control board. Be sure all six (6) pins go in. If only one row of pins is connected, the whole display may not function.





6 The Option key is now installed.

7 Using the two screws you set aside earlier, reinstall the Option key cover plate.

8 Reinstall the power cord.

Installing the Video Input Module (VIM)

The optional Video Input Module (VIM), sometimes called the video decoder, is shipped separately and installed on site.

Removing the Control Board

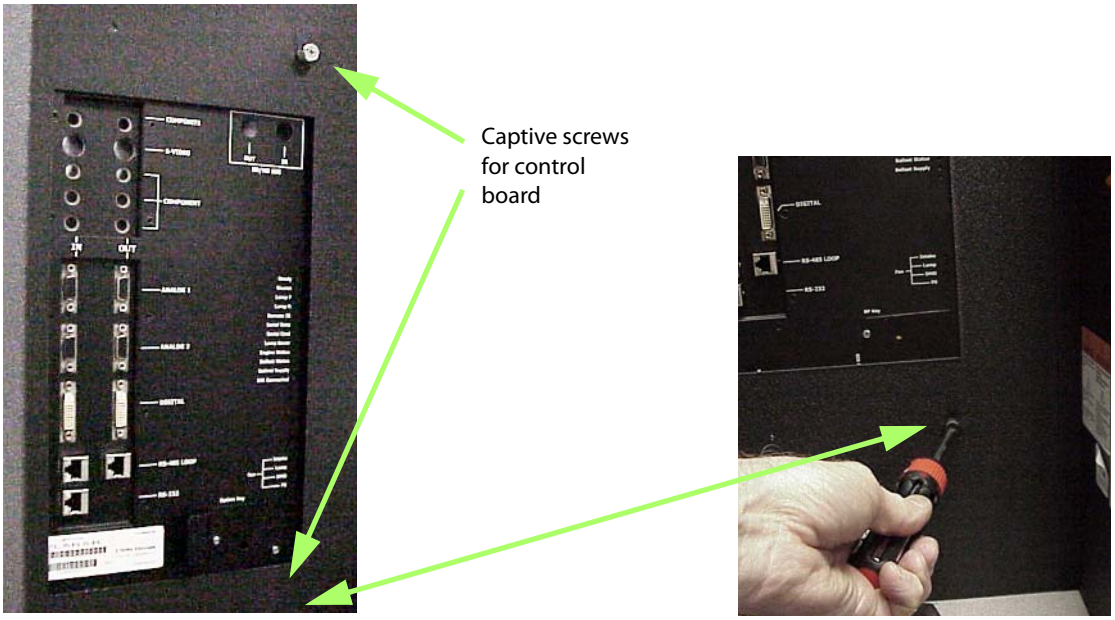
1 Attach a ground strap to your wrist and the chassis.

WARNING! Failure to properly use a grounding strap can destroy sensitive electronic components in the control board.

2 Turn off the power on the c50/67R and remove the power cord.

WARNING! Always turn off power and remove the power cord when adding or removing an electronic part.

3 Loosen the screws on the back of the display that hold the control board in place.

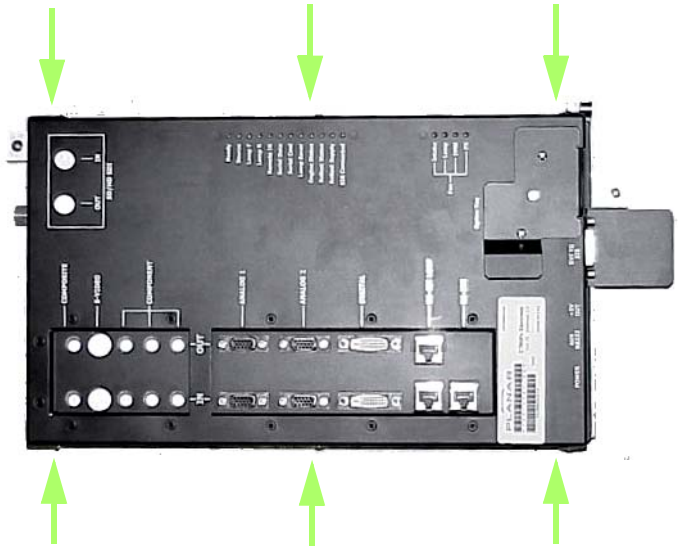


4 Swing the control board in about 45° and lift it off its pin hinges. It will still be connected to two or more cables at the bottom.

5 Bring the control board partly out the opening and disconnect all the cables.

Removing the Control Board Cover

1 Remove six screws from the sides of the cover.

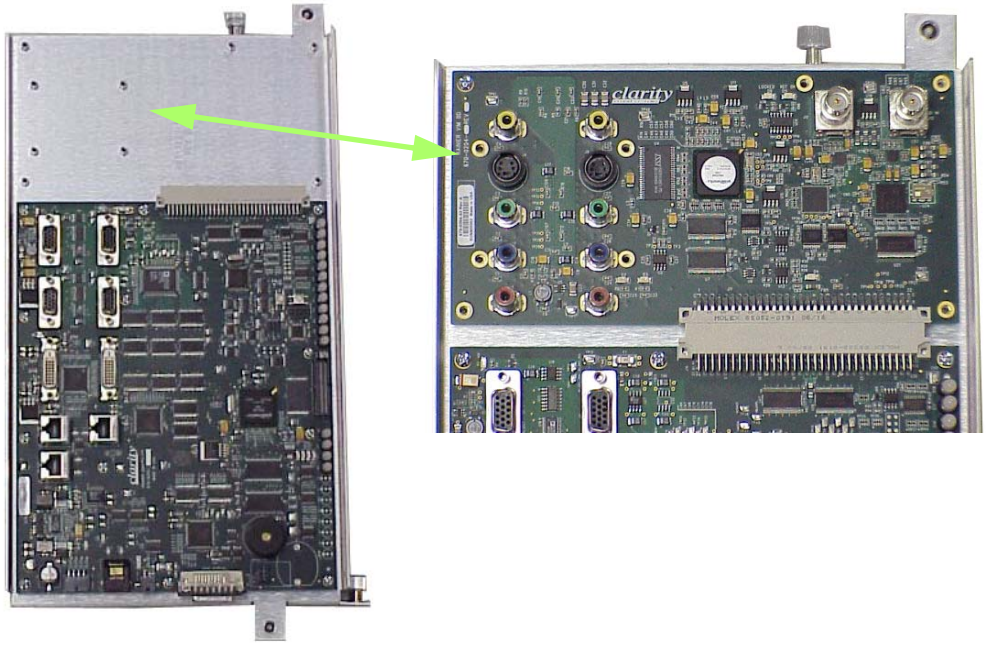


2 Using a 3/16" nut driver, remove the DVI connector EMI shield. The EMI plate may be stuck to some EMI tape. Be careful not tear the tape.

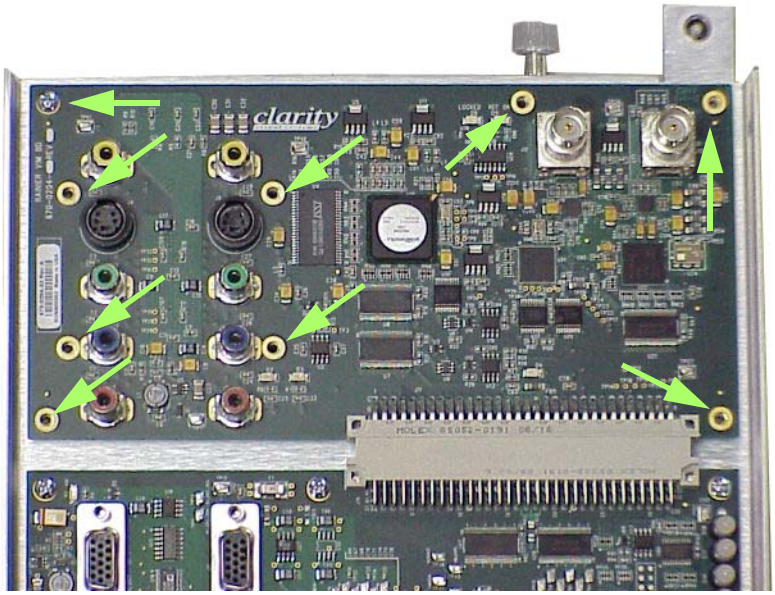
3 Remove the cover. It is a snug fit so it may be difficult to remove.

Installing the Video Input Module

1 Slide the VIM in its space above the control board and press it into its connector on the control board.



2 Install the nine screws to secure the board.



3 Replace the control board cover.

a Check first to see that all the LEDs are straight and none are bent over.

b Carefully lay the cover all the way down over the control board, watching the LEDs to see that they are visible through their holes.

4 Press the cover onto the control board; it is a snug fit.

5 Attach the cover with the six screws at the sides.

6 Replace the EMI shield at the bottom with the 3/16" stand-off nuts.

7 Install the two SDI nuts and washers that were shipped with the VIM in the top right corner of the control board.

8 Reconnect any cables you may have removed.

9 Replace the control board in the display. The hinge is two pins on the display chassis and two holes on the control board. Fit the top hole first. That pin is a little longer.

It is now safe to replace the power cord and turn on the power.

Wall, Tower, or Banner Installation Checklist

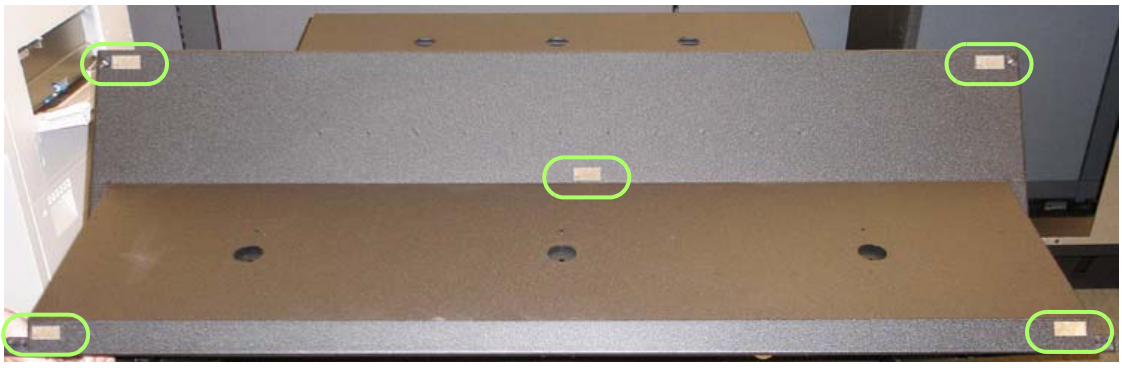
Use this quick checklist to ensure you perform the vertical array installation steps in the correct order.

Note: Use this checklist if you are installing a vertical array. For a stand-alone installation, see "Stand-Alone Installation Checklist" on page 23.

Caution: This is just a checklist. The more detailed descriptions of the work to do is given in later sections. Read these before you begin.

Installing the FIRST or BOTTOM ROW

1. Unpack the displays for the bottom row only. Do NOT unpack screens yet. Check the contents (See "Unpacking and Checking Accessories" on page 9).
2. For each unit, install the Option key and Video Input Module, if ordered. These are field-installed options; although you may install them at any time, if you are building a tall array, it is easiest to install them while they are on the ground. See "Installing the Option Key" on page 15 and "Installing the Video Input Module (VIM)" on page 17.
3. Release the optical engines from their shipping position (See "Releasing the Optical Engine" on page 13).
4. For each unit, install the bottom row screen support (See "Installing Screen Supports" on page 29).
5. Assemble the bottom row ONLY (See "Assembling a c50/67R Wall" on page 24).
6. For front access systems only, affix plastic spacers on top of the chassis of the lower unit before stacking, as shown below.



Note: The picture shows the display as seen from the top.

7. Check for plumb, aligned and square.

Note: If the wall will be high or large, it may be difficult to configure the displays using the remote control because of the distance. Many installers prefer to use RS232 commands to adjust the units in a wall. If you plan to work this way, it is good idea to set the RS232 ID address while the units are still on the floor. See "Serial Port Settings and Diagnostics" on page 119 if you have not done this before.

Installing the SECOND and SUBSEQUENT ROWS

1. Unpack only the displays that will be in this row; do NOT unpack screens yet.
2. Check the contents.
3. While the units are still on the ground, install the Option key (see "Installing the Option Key" on page 15) and Video Input Module (see "Installing the Video Input Module (VIM)" on page 17).
4. Release the optical engines from their shipping position. See "Releasing the Optical Engine" on page 13.
5. Before stacking more units, put plastic spacers on the top of the chassis of the lower units, as you did for the first row. See picture, step 6 on page 21.
6. Assemble the next row on the previous row, starting with the center unit and working out.

Caution: As each second-row unit is placed on the first row, tighten the bolt-through captive screws in the bottom row to hold the second row in place.

7. Confirm the units are still plumb, aligned and square. Adjust bottom shims as needed. See "Building a Row" on page 24.
8. Install screen brackets as you go up.
   a. See "Screen Brackets for c50RP/c67RP, c50RX/c67RX for Front Access" on page 39 or "Screen Brackets for c50RP/c67RP, c50RX/c67RX for Rear Access" on page 41.
9. If you have a wall of three or higher, install tie backs. Leave them somewhat loose for now. Each display has M8 threads in the back for this purpose. For greater support, use with rear Side Top-Bottom brackets.
10. Mount the WallNet box on the inside of one chassis. See "Mounting the WallNet Box" on page 49.
11. Install power and source cables. See "Connecting Power" on page 53 and "Connecting Source Cables" on page 43.

12 When the wall is complete—aligned, plumb and square, all screen brackets installed—install screens starting with the center of the bottom row and moving outwards in the row, and then install screens on the next row up. (See "Installing a Screen" on page 60.)

13 Go to "Configuring a c50/67R" on page 65.

Stand-Alone Installation Checklist

Use this quick checklist to ensure you have performed the stand-alone installation steps in the correct order.

Note: Use this checklist only if you are installing a single c50/67R as a stand-alone display.

1 Unpack the display and check the contents (See "Unpacking and Checking Accessories" on page 9).

2 For each unit, install the Option key and the Video Input Module.

These are field-installed options. See "Installing the Option Key" on page 15 and "Installing the Video Input Module (VIM)" on page 17.

3 Install screen brackets and the bottom row screen support. See "Installing Screen Brackets, General Description" on page 33 and "Installing Screen Supports" on page 29.

4 Install cables:
- See "Connecting Source Cables" on page 43.
- See "Connecting Power" on page 53.

5 Install the screen (See "Installing a Screen" on page 60).

6 Go to "Configuring a c50/67R" on page 65.

Assembling a c50/67R Wall

Use these instructions to prepare a c50/67R for installation.

Plan for Access Space Behind the Wall

Even though the displays can be installed right up against a wall, you may want to allow 24-30" of space behind the displays for rear service access. Some of the service procedures are easier to perform from the rear.

If the displays are enclosed, you must provide a space for exhaust air from the displays to get away. If the space behind the displays has no air circulation, the displays will get too hot. If the air does not circulate well enough naturally, consider adding a fan behind the stack, or planning for A/C venting. The installer is responsible for ensuring that the ambient temperature is always within specifications.

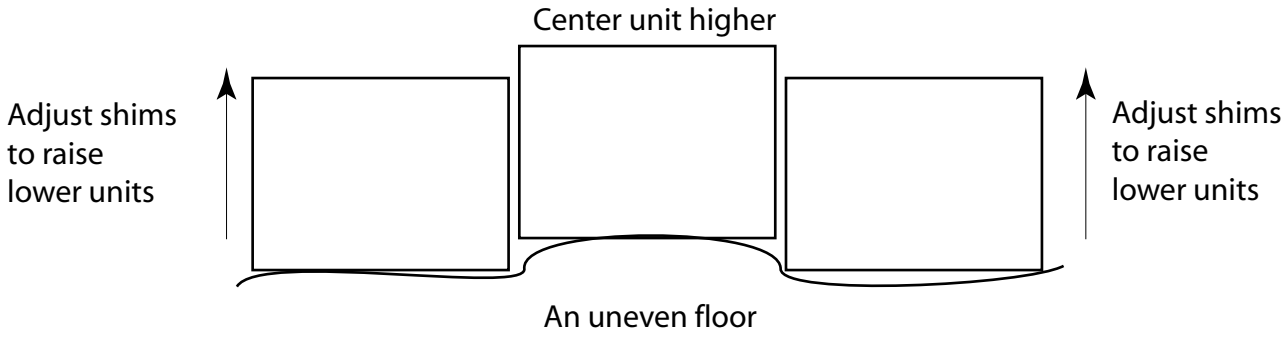
Note: A wall of c50/67R displays *must* be vertical. It cannot tilt in any direction.

Building a Row

Before you begin this section, unpack the c50/67R as described in "Unpacking and Checking Accessories" on page 9.

1. If this is in the first row of a wall, start by finding the highest part of the installation area. The easiest way to determine this is by placing shims (or a customer-supplied stand) with the bottom row of units in place and seeing which unit is highest. Adjust the bottom shims to make the bottom row level.

2. Install a screen support on each cube in the bottom row.

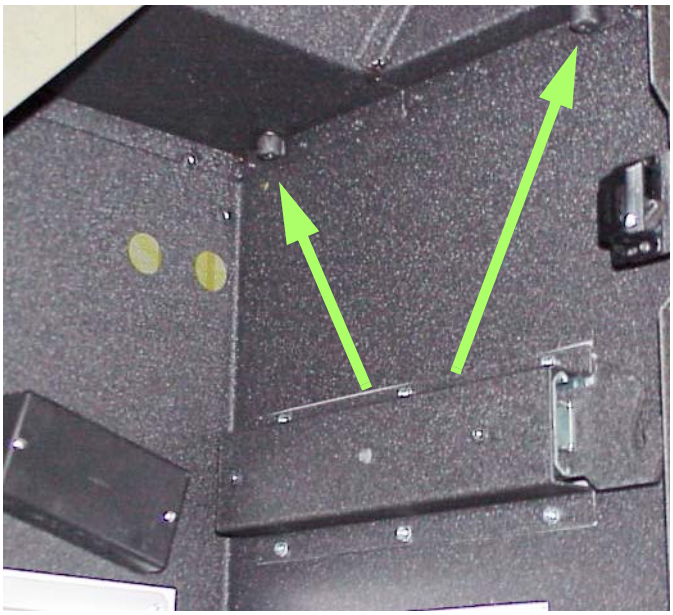


Note: It is important to get the first row right. Any mistake made here will multiply as the wall goes up.

3. If this in an upper row of an array, place the units of the next row on the units of the previous row and check that the units are still plumb and aligned.

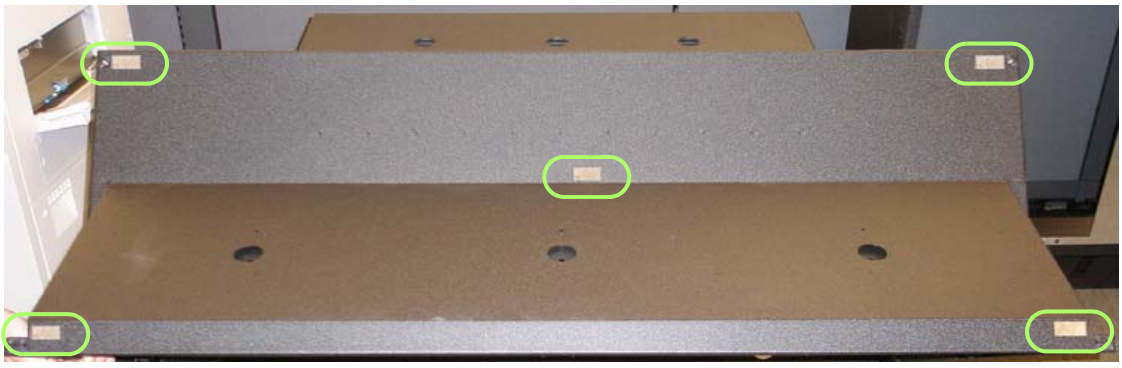
WARNING! The units are heavy! Do not attempt to install units in upper rows with fewer than two people, perhaps even four. You may wish to use scaffolding or a scissor lift to prevent injuries.

4 Starting with the second row, tighten the four (4) captive screws (two on the right side, two on the left side) in the lower-row units to hold the upper-row units in place. The second row is especially likely to tip over unless secured by these captive screws. Also tie upper units to a wall or other building structure to prevent tipping. Each display has M8 threads in the back for this purpose. For greater support, use with rear Side Top-Bottom brackets.



Threads are located inside the chassis. This picture shows the threads on the right side of the display.

5 For front access systems only, affix plastic spacers on top of the chassis of the lower unit before stacking, as shown below.



Note: The picture shows the display as seen from the top.

6 Check the row for plumb, aligned and square. Adjust bottom shims as needed.

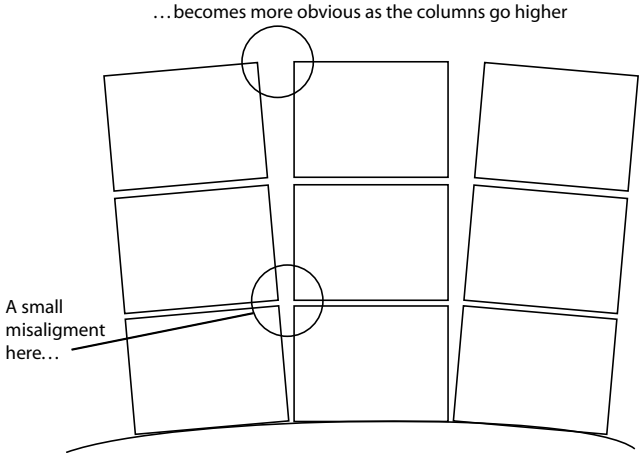
7 For units in the same row, check that the fronts are in a straight line with the string.

We suggest you pull the string very tight and adjust the units as needed.

Note: You may have to repeat this process as you push or lift the units to adjust the bottom shims under parts of the wall to correct for uneven floors. Simply sighting down the row is not good enough.

8 With the units straight, check that the sides and fronts of the units are plumb.

It is likely that you'll need to adjust with shims to compensate for uneven floors. You may not be able to detect when the bottom row is out of plumb by as little as 3/64" (1mm); however as the wall goes up, the error will multiply and you'll be able to detect out of plumb in the top row when it grows to 3/32".



It is at this point you may need to go back and adjust the bottom shims. Use a level to ensure that the units are plumb (true vertically for both the sides and the front) and aligned from unit to unit. The slightest deviations from plumb and aligned must be corrected by adjusting the bottom shims.

Plan to spend half or more of the entire setup time for the whole wall on this one task—getting the first row plumb, aligned and straight.

When the first row is perfectly plumb, aligned and straight, the rest of the wall goes up easily and the screens will fit well and work well. When it is not plumb, aligned and straight, the upper layers are difficult to align and the screens won't open and close as easily.

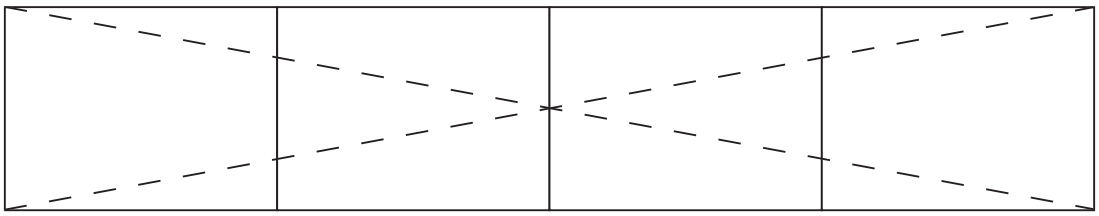
When units are assembled without checking for plumb, aligned and square, bolt holes on screen brackets may not align with chassis bolt holes. This is a clue that some adjustment is needed in the bottom shims to align and straighten the wall.

In these pictures, the fronts of the units are not in the same plane, which prevents the top alignment bracket from sitting flush against the units.

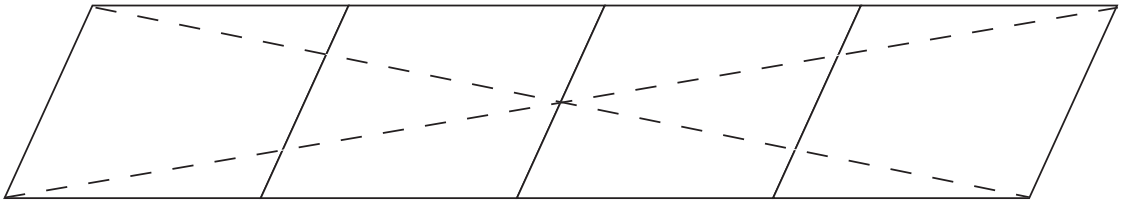
Note: Keeping in mind that small errors in alignment or measurement always seem to add up rather than cancel out, you may be able to make only one plane plumb and aligned. If this is the case, make the front plumb and aligned; adjust bottom shims under the backs and sides to ensure that at least the fronts are in a plane.

9 Repeat steps **3** through **8** until you have completed the entire wall.

10 Use a steel measuring tape to measure the whole wall, from corner to corner on both diagonals. If diagonals are the same, the wall is a rectangle with square corners.



If the diagonal measurements are not the same, the wall is skewed.



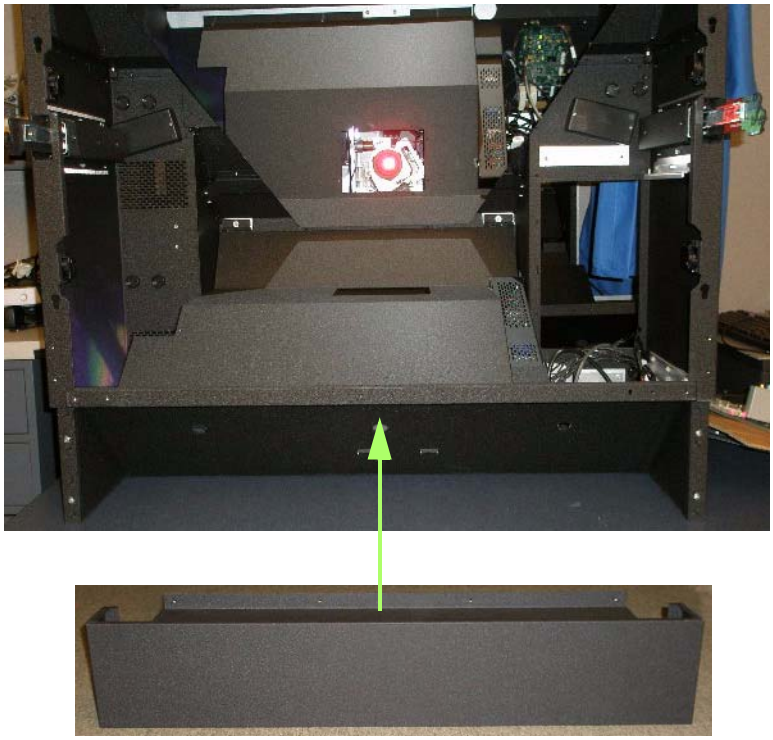
Adjust the bottom shims to make corrections.

Installing Screen Supports

If you are building a wall higher than two rows, you will need to install a screen support on each unit of the bottom row. This provides additional row stability. The screen support should be installed and used with rear brackets. The screen support and eight M4 x 8mm screws are shipped separately.

1 Loosely install two screws on each side of the chassis.

2 Place the screen support in the opening below the chassis.



3 As you move the screen support into place, line up the key holes on the screen support with the screws on the sides of the chassis. You will need to lift up the chassis slightly to get the key holes over the screws.

Keyholes are on the inside edges of both sides of the screen support

4 Using a Phillips #2 screwdriver, loosely install four screws to attach the top of the screen support to the chassis.

5 Install the screen See "Installing Screens" on page 59.

6 After the bottom row screens have been adjusted to their final position, place shims under the screen support to achieve an even gap between the support and the screen.

7 Remove the screen.

8 With the shims still in place, tighten all eight screws that attach the screen support to the chassis.

9 Once all screws are tightened, remove the shims.

Installing Screen Brackets, General Description

The c50/67R can be installed in arrays in one of three ways:

- Front-access only; no rear clearance to service components from the rear
- Rear-access only; 24-30" rear clearance to allow access from the rear
- Either front or rear access (using front-access screen brackets); 24-30" rear clearance to allow access to the rear

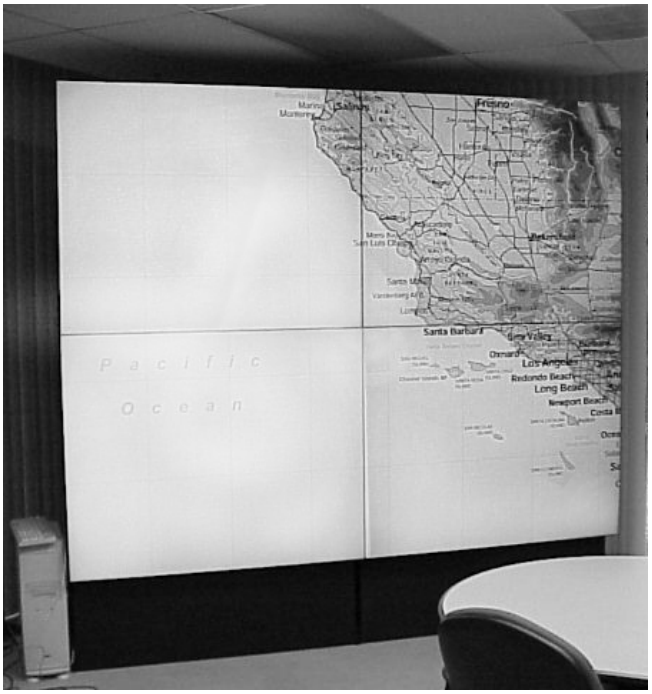
The distinction is important because when you use rear-access screen brackets, the screens are screwed down tight to minimize the gap between the screens and the screens cannot be removed from the front.

The screen brackets were designed to do two things:

- Ensure the unit chassis align properly with each other
- Align the screens to the chassis

When a front-access array is properly installed, there will be a small gap between the screens; they will not quite touch each other. This is so the screens can be opened and closed easily and not be wedged together tightly with no movement possible. When a rear-access array is properly installed, the screens are tight up against each other and screwed down to prevent any misalignment of screens.

The c50/67R was designed to build flat display walls, that is, all the screens together produce a flat picture space. Custom brackets are available for curved wall installations. Contact Planar for more information.



Vertical 2 × 2 wall using Planar's Big Picture™ in a conference room.

Use the alignment brackets as reference points to check that the fronts are in a plane. Avoid using the brackets to pull misaligned units into alignment.

Screen Brackets for Stand-Alone Installation

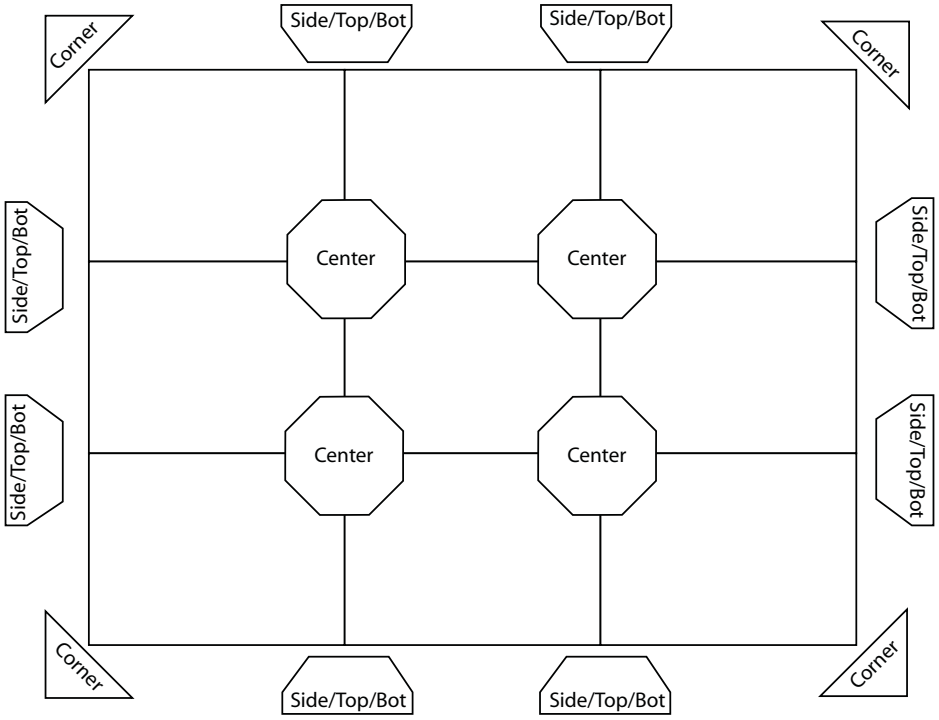
Install four Corner Screen Brackets, one in each corner of the large opening.

Installing Screen Brackets for Banners, Towers, and Walls

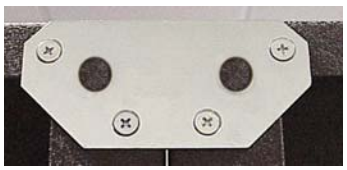
Depending on your configuration, you will have a different number of brackets, and in some cases, different brackets. Although it would be space consuming to enumerate the brackets needed for every possible configuration, the following sections list the three main types of configurations and the brackets needed for typical installations.

Walls

A typical wall might be a 3 x 3 array, as shown below:

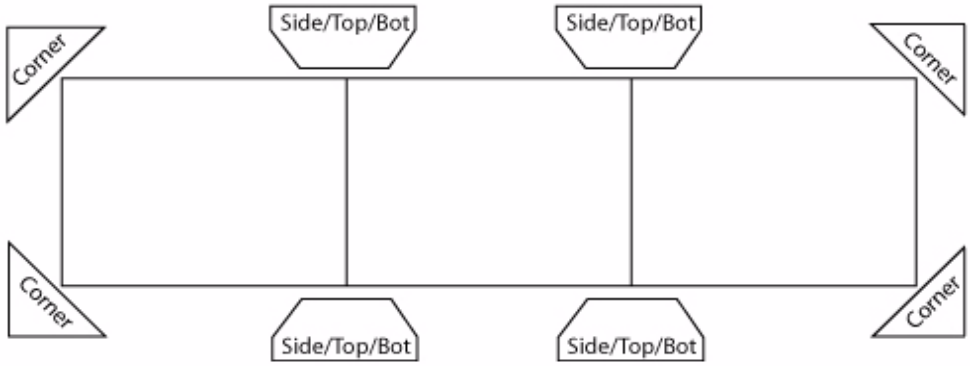


Walls have four Corner Screen Brackets and at least four Side-Top-Bottom Screen Brackets.

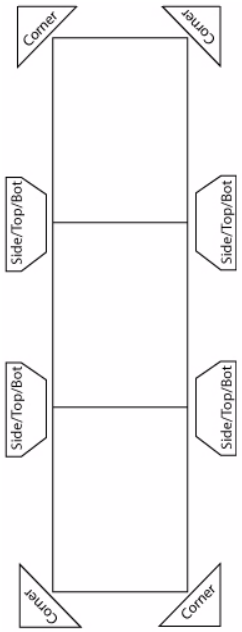
Front or Rear Side-Top-Bottom Screen Bracket **Note:** Front brackets have pins.	 
Center Screen Bracket	

Banners and Towers

A typical banner might be a 1 x 3 array, as shown below.



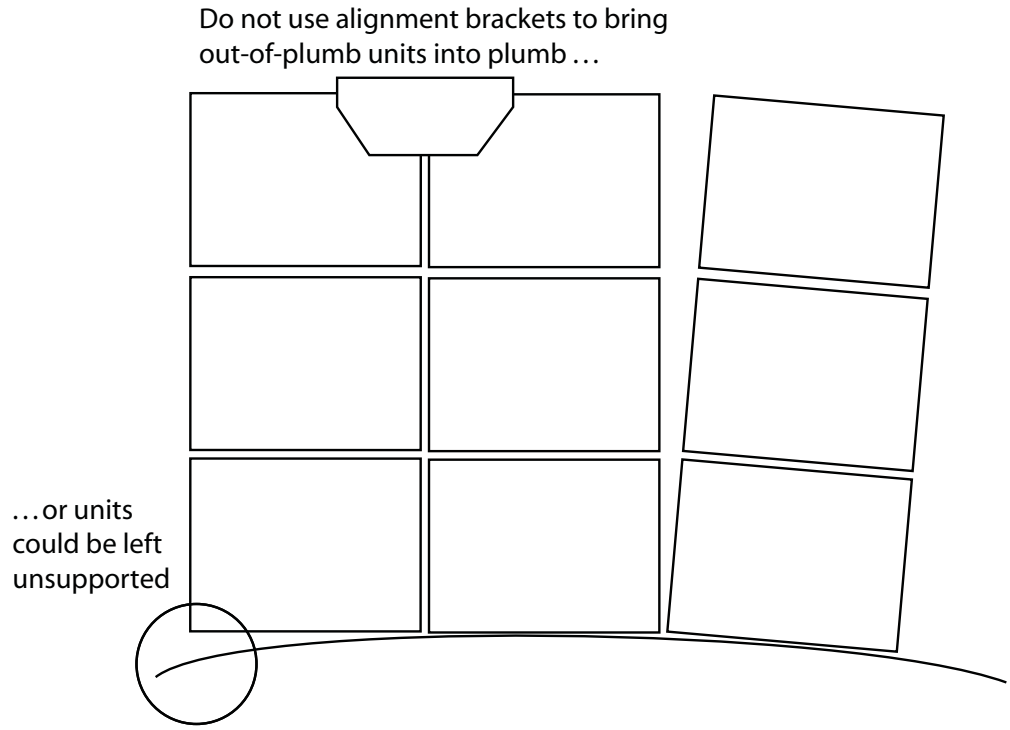
A typical tower might be a 3 x 1 array, as shown below.

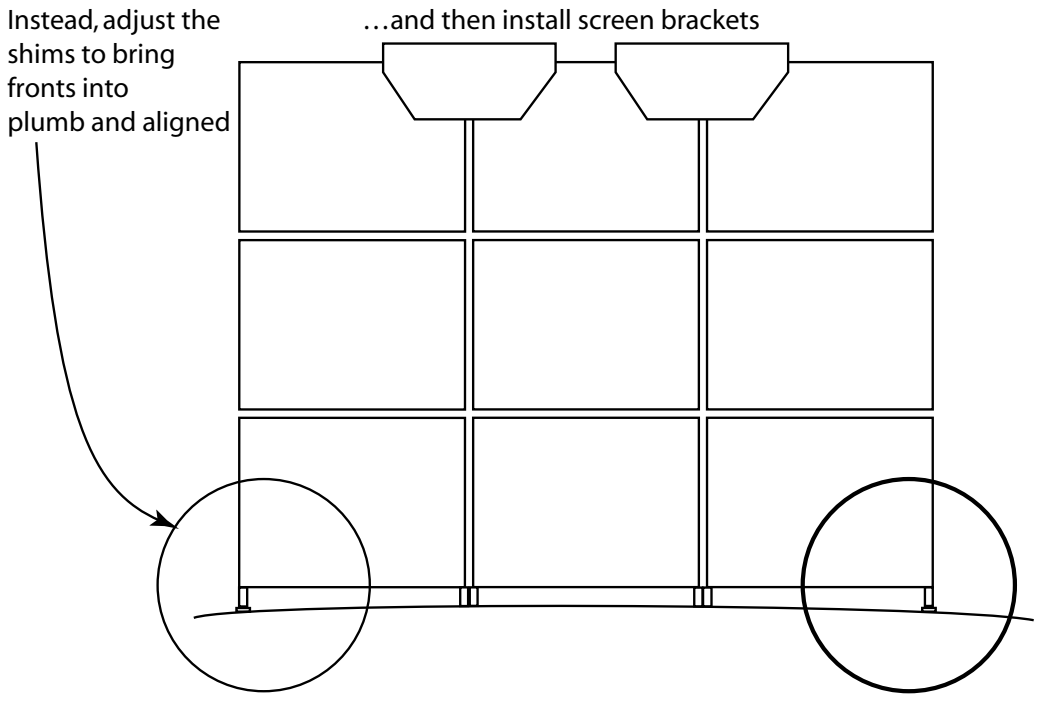


Banners and towers have four Corner Screen Brackets and at least two Side-Top-Bottom Screen Brackets, but **no** Center Screen Brackets

Note: You may find that as you install the alignment brackets, you may need to adjust the bottom shims.

Caution: Do not use alignment brackets to align units.



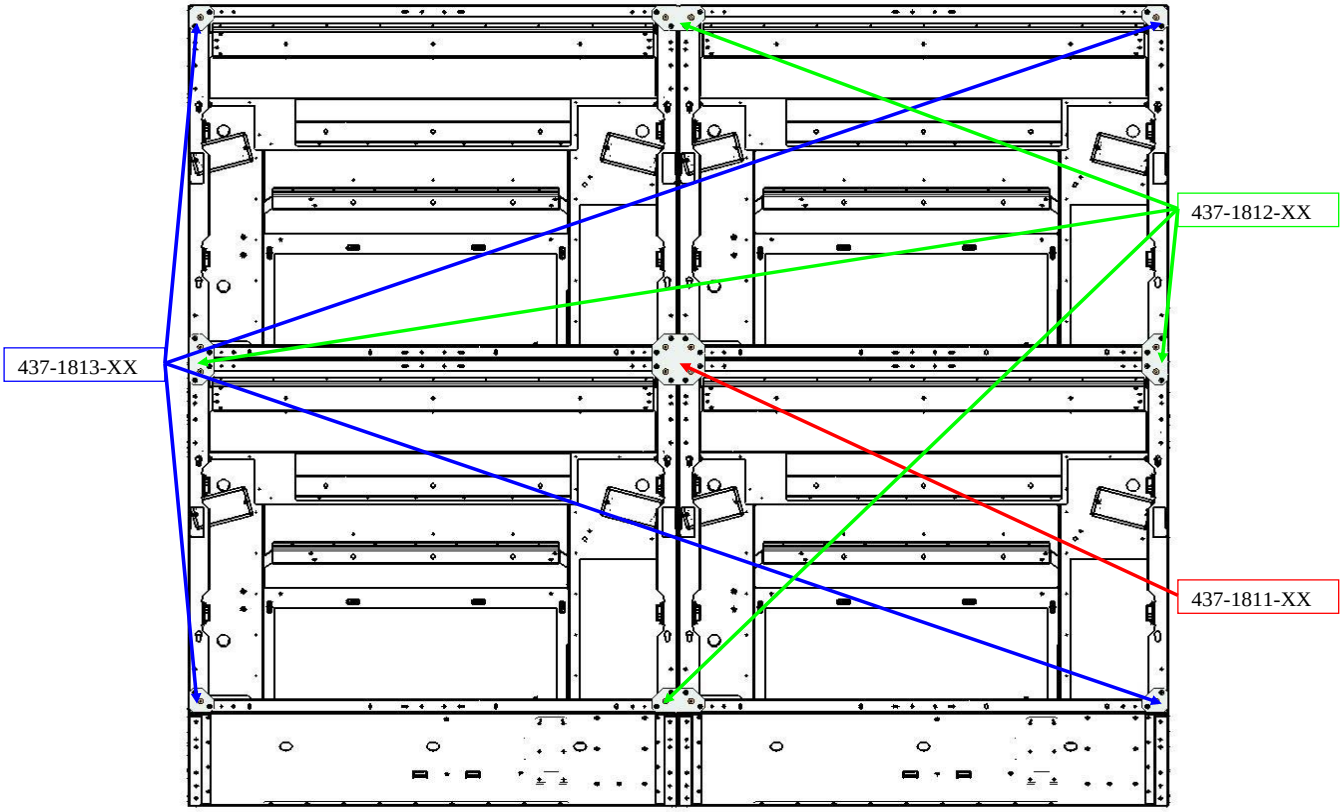


Screen Brackets for c50RP/c67RP, c50RX/c67RX for **Front Access**

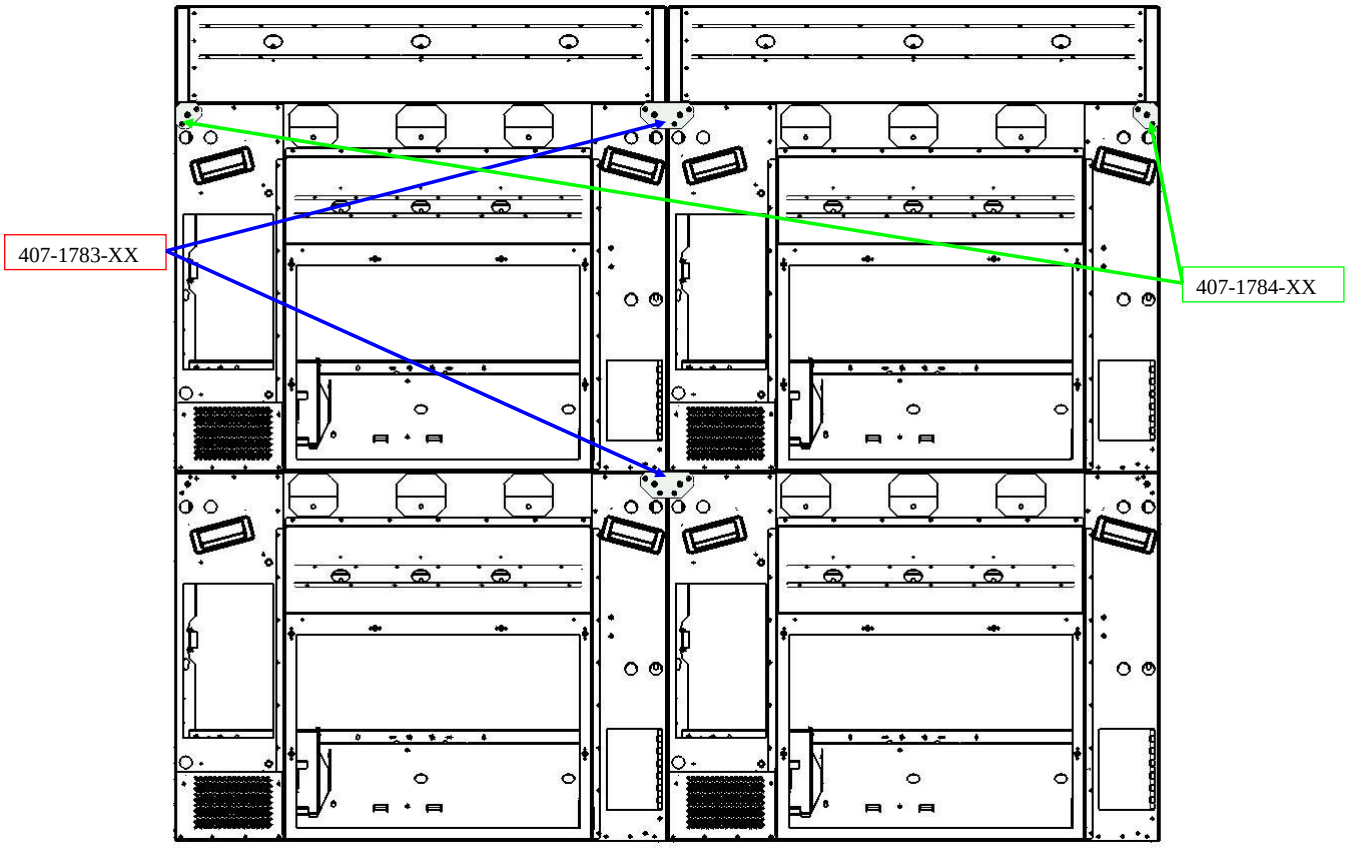
The screen brackets are different for front access and rear access.

The brackets will leave a vertical space of .06mm between the cubes. For front access systems only, affix plastic spacers on the top of the support surfaces of lower units before stacking.

Front screen brackets for **front access**



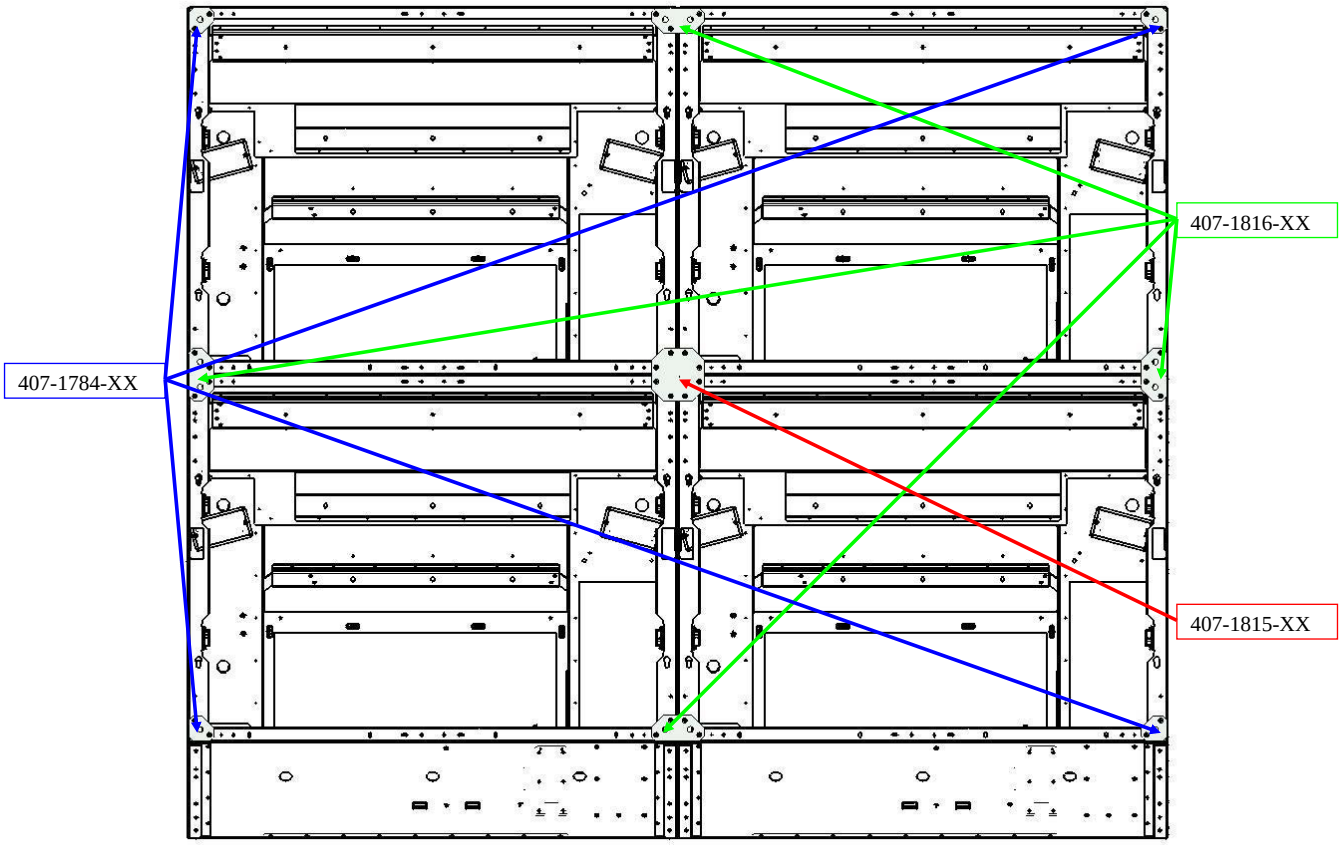
Rear screen brackets for **front access**



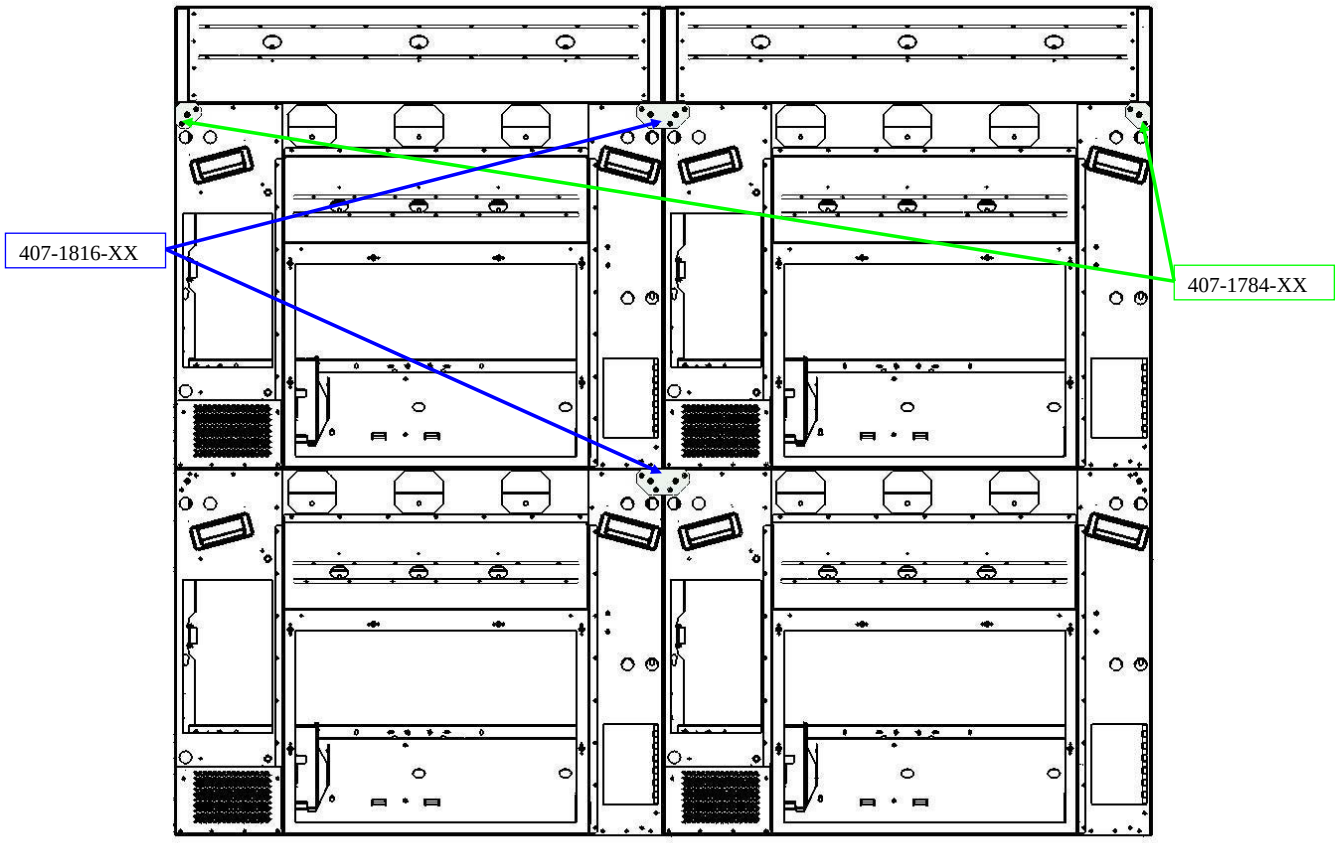
These screen brackets are flat. They do not have guide pins (“bullets”) facing forward.

Screen Brackets for c50RP/c67RP, c50RX/c67RX for **Rear Access**

Front screen brackets for **rear access**



Rear screen brackets for **rear access**



These screen brackets are flat. They do not have guide pins (“bullets”) facing forward.

Connecting Source Cables

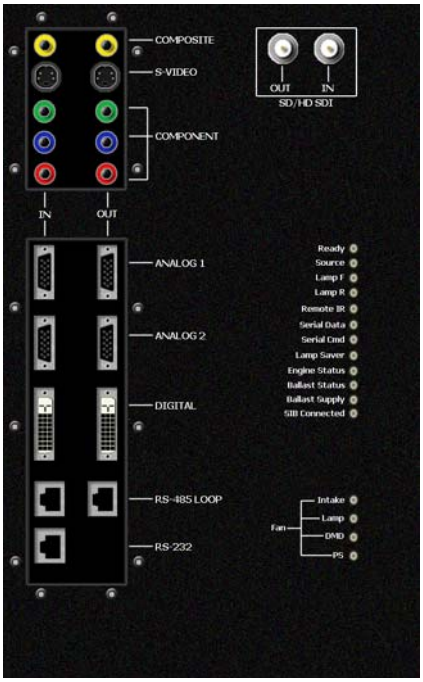
All cabling for the c50/67R must go through the rear. The top of the rear panel is a cable tray. You may run cables as the rows go up or when the installation is complete.

Connecting Picture Sources

The three main types of inputs are:

- Analog computer (from UXGA down to VGA)
- Digital computer (Digital Video Interface, or DVI, digitally connects computers to their monitors or interconnects to any displays)
- Video (optional with VIM)
  - Composite (NTSC, PAL or SECAM)
  - S-Video (NTSC and PAL - 50Hz or 60 Hz)
  - Component (480i, 480p, 576i, 576p, 720p, 1080i)
  - SDI (Serial Digital Interface inputs from 480i to 1080p)

Each of these inputs has a separate loop-through output.



Selecting the Correct Input

The following table gives you common examples of which devices have which inputs. In terms of input quality, the table is in order of most desirable input to the least desirable input.

Input	Found on the Following Devices
DVI	Computers with digital out capability
SDI	Studio quality video equipment
Analog	Computers, laptops RGB and RGBS from video processors or other professional equipment (may need BNC to DB15 adapter cable). These may have separate sync, composite or sync on green.
Component	DVD players Set top boxes (e.g. for cable TV or satellite TV) Any YPbPr signal
S-Video	DVD players Set top boxes VCRs
Composite	TV tuners VCRs Set top boxes

Loop-Through

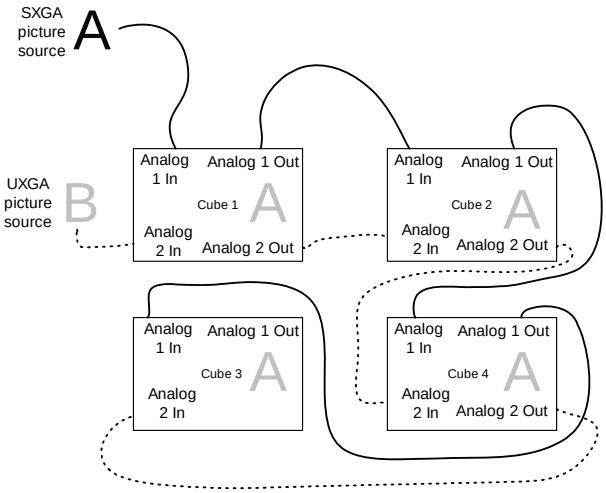
Loop-through means to connect the inputs of several displays together in a series string. This makes connections simpler and easier. There are many loop-throughs in the c50/67R:

- **Analog 1 In** is a VGA connector, which accepts computer pictures up to UXGA. It has its own loop-through: Analog 1 Out. Any picture coming into the Analog 1 In connector comes out the Analog 1 Out connector to the next display. These also accept RGB with separate H & V sync, composite sync, or sync on green.
- **Analog 2 In** is just like Analog 1 In, and it has its own Analog 2 Out.
- **Composite video** has its own loop-through called Composite Out (yellow). These are both RCA connectors.
- **S-Video In** has its own loop-through called S-Video Out. These are both 4-pin DIN connectors.
- **Digital In** has its own loop-through, Digital Out. The Digital Out connector will carry the Analog 1 or the Analog 2 picture in DVI format, if either of these is selected in the PICTURE menu.
- **Component loop-through** has three output connectors: Y (green), Pb (blue), and Pr (red). All are RCA connectors.
- **SDI** has its own loop-through BNC connector.

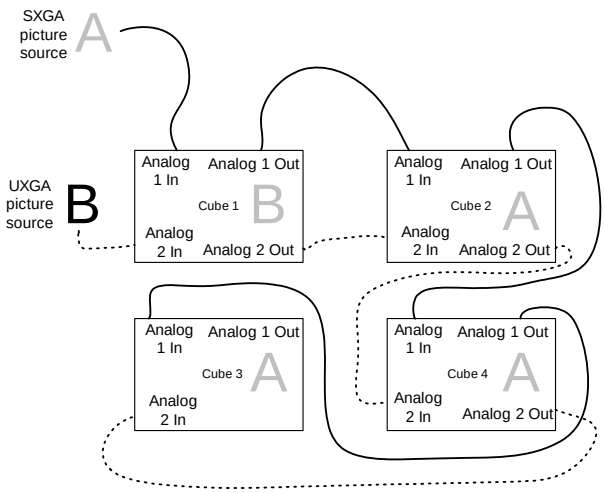
What is Special About Digital Out?

For all the loop-throughs except digital, what goes in is what comes out. Switching which connector is used for the displayed picture *does not* change what comes from their output connectors. Whatever goes in Analog 1 In comes out Analog 1 Out; it is not changed in any way, but it is buffered. In the upper pair of illustrations shown below, switching from one input to another on the first unit only changes the picture in the first unit, not in the rest of the wall.

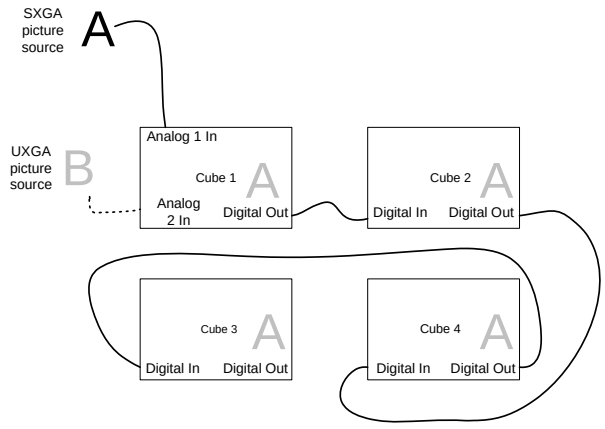
Digital Out is different. For the Digital Out connector, switching inputs *does* change what comes out of it. The selected picture from either Analog In or Digital In *always* comes out the Digital Out connector in digital form. In the illustrations shown below, switching sources in Unit 1 *does* change the picture in the rest of the wall.



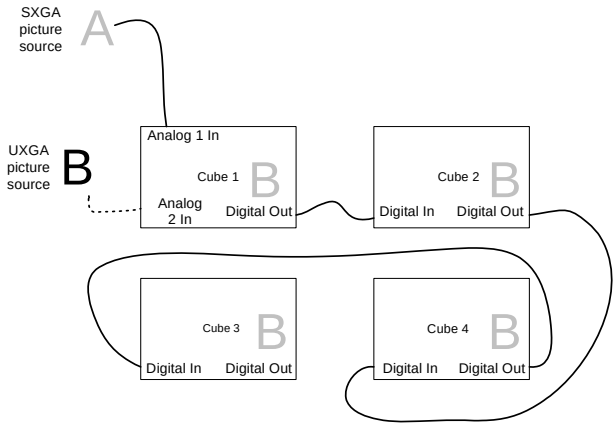
When all units have ANALOG 1 selected as the source picture, all units show picture A.



Then Unit 1 (only) selects ANALOG 2 as the source picture. Unit 1 shows picture B, but all the other units continue to show picture A. Nothing changed for them.



In this digital loop-through arrangement, Unit 1 selects the ANALOG 1 input, and all other units select Digital In. All units show picture A.



Then Unit 1 (only) selects ANALOG 2 In, and all other units stay with Digital In. All units show picture B. Units 2, 3 and 4 did not change their input selections, but their pictures changed.

Note: When an analog source is selected, the c50/67R converts the analog input to DVI and makes this available at the Digital Out connector. The signal coming from the Digital Out connector will be accepted and displayed by other c50/67R displays. However, it does not strictly conform to the DVI standard. Non-Planar units will not be able to display this signal.

Note: Only the Analog 1 and Analog 2 pictures are available from the Digital Out connector.

The **advantages** of DVI are:

- DVI is less subject to picture degradation than analog methods of loop-through. (However, even with DVI, loop-through is not infinite.)
- DVI inputs require much less setup and adjustment. You adjust the picture in the first unit only, the unit with the analog input. Setup time is reduced.

The Limits of Loop-Through

Looping signals through from one display to another is very convenient, but it cannot be done forever. There are several ways to distribute signals to all the units without significantly degrading the picture.

You can string displays together, feeding the same analog signal - VGA, SVGA, RGBS, NTSC, PAL, SECAM - to six or eight displays. After that you may see noise and distortion in the picture.

Digital signals - coming into the Digital In connector and looping out the Digital Out - also deteriorate as they are processed again and again in each display. At UXGA rates, after 4 or 5 displays, you may see dropouts and sparkles in the picture.

Note: DVI can often loop-through to 4 or 5 displays and sometimes more. The number of units that can serially loop with Digital In/Out depends on many local factors beyond the control of Planar Systems. There is no guarantee that any specific number of displays can be successfully linked digitally.

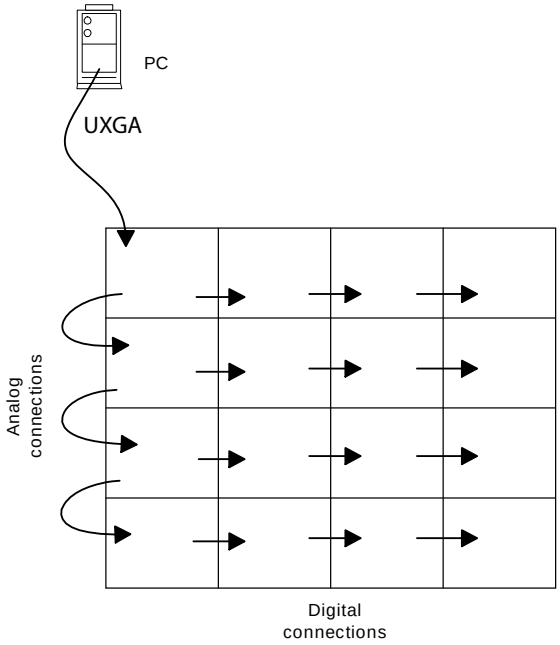
So how do you feed one signal to 16 units in a 4 × 4 wall? Or 48 units in a 4 × 12 wall? Here are some suggestions.

Analog, Then Digital

In this example, a wall of 16 units is connected with both analog and digital loop-throughs.

The source is an SVGA picture from a PC. This comes into the Analog 1 connector of the first unit and loops out of the analog loop-through to the Analog 1 connector of the second unit.

The Digital Out of each unit in the first column is connected to the Digital In of the next unit in the row, and so on across the whole row.



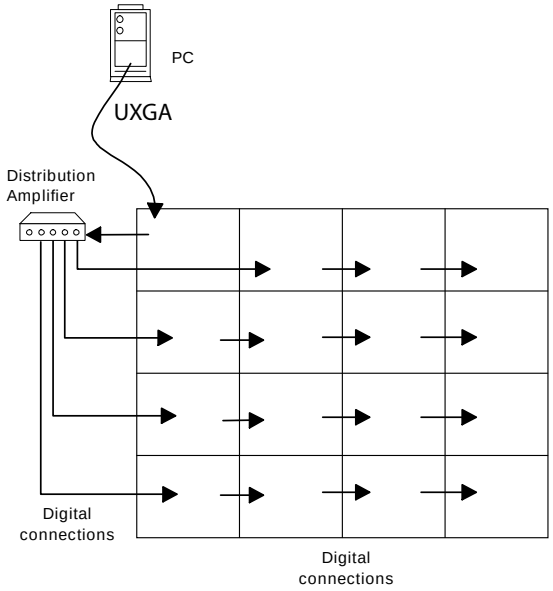
In this system, the farthest unit is only seven units away from the source.

Digital Distribution Amp

If you want to connect a large wall with digital only, use an external digital distribution amplifier.

In this system, the first unit is fed a UXGA picture from a PC, as before. Then the Digital Out is taken to the external distribution amp (DA).

The DA feeds the rest of the units in the first column, and the digital outputs feed the rows. In this arrangement, the farthest unit is six away from the source (including the DA).



Other Ways

Some installations use a very large DA, or several DAs, and feed each unit with a separate line. This is done quite often with analog DAs and works well.

Other possibilities include feeding an analog signal to one unit, taking its digital output to a digital DA, and feeding all the rest of the units directly from that digital DA.

Which Method to Use?

Whatever method you use, try to arrange it so that the signal to the farthest unit goes through no more than 7 or 8 amplifiers. In counting amplifiers, include each DA and each unit the picture loops through, but not the source itself.

Video Loop-through

Straight video loop-through of composite or S-Video sources also has limitations. How far loop-through will continue to look good depends somewhat on the length and quality of the cables used.

In S-Video particularly, there are inexpensive, low quality cables available that won't loop beyond a few displays. The early symptom is loss of chroma (color).

For video loop-through, it is not necessary to terminate the last unit. The signal is terminated and buffered in each unit.

Mounting the WallNet Box

The optional WallNet device is shipped separately and installed on site. For detailed instructions about how to set up and configure the WallNet device, see the WallNet manual you received with your WallNet shipment.

1. The WallNet box is to be installed on one c50/67R. Select that unit now.

2. Attach a ground strap to your wrist and the chassis.

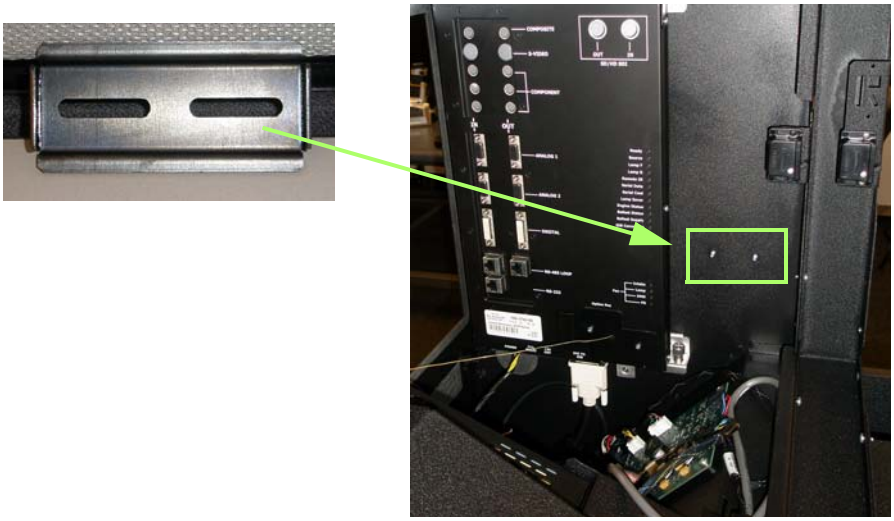
WARNING! Failure to properly use a grounding strap can destroy sensitive electronic components in the control board.

3. Do one of the following:
   - For front access units, remove the screen.
   - For rear access units, loosen the screws on the back of the unit that hold the control board in place. Swing the control board inside the chassis.

4. If the power is on, turn it off and remove the power cord. (For front access units, reach through the opening next to the control board.)

WARNING! Always turn off power and remove the power cord when adding or removing an electronic part.

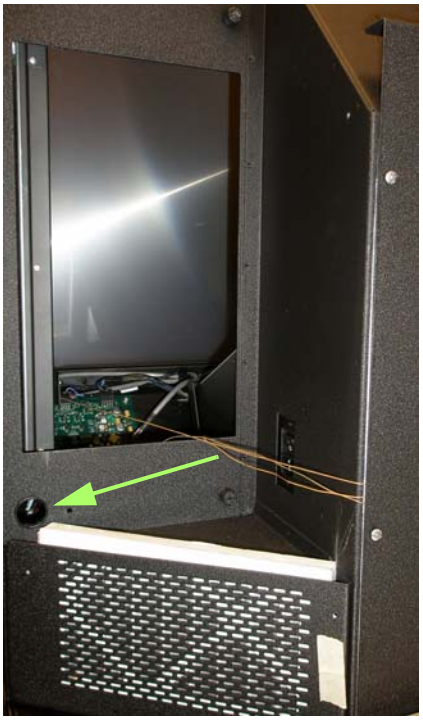
5. Remove the bracket from the WallNet accessory box and slide it on top of the M4 threads that are already in the chassis.



6. Remove the two nuts from the WallNet accessory box and use them to secure the bracket to the chassis.

7 Snap the back of the WallNet box on the bracket.

8 On the back of the unit, push out the hole plug (near the air filter) and replace it with the cable route. This will be used to route the WallNet network cable from inside this unit to a network connection.



9 Remove the WallNet power cable from the accessory box. Plug one end of the power cable into the bottom of the WallNet box and the other end into the System Interface Board (SIB).

10 Plug in the power cord and turn on the power.

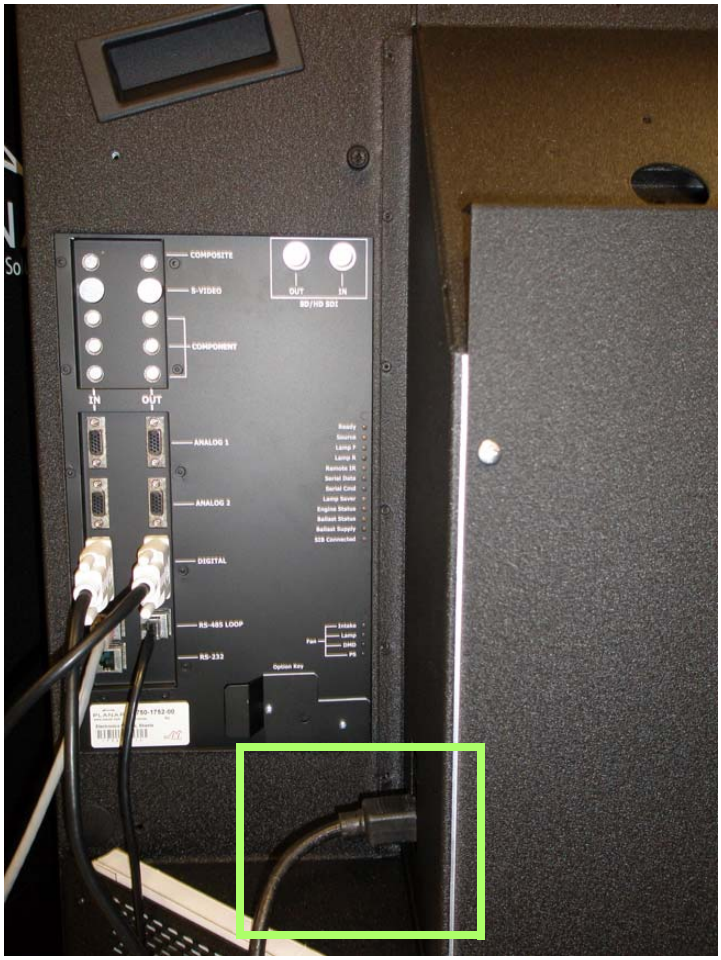
11 Do one of the following:
- For front access units, replace the screen.
- For rear access units, swing the control board back into place and retighten the screws on the back of the unit.

12 For detailed instructions on how to configure your WallNet device, see the WallNet manual.

Connecting Power

Each display may draw up to 2.0 A at 115V or 1.0 A at 230V. For countries outside of North America, it is the responsibility of the installer to provide the power supply cord certified for use in the destination country.

The power switch and power receptacle are located at the left rear of the display.



Power receptacle and power switch location

Connect a power cable to the power supply. The power supply is auto-ranging, so it works with any source from 100 to 240 VAC, 50 to 60 Hz.

About UPS Supplies

Some installations use a UPS - Uninterruptible Power Supply. Most UPS devices will work with the c50/67R. Review the power specifications of your UPS device to make sure it is compatible with the c50/67R.

RS232 Communication

RS232 control is not necessary for operation, but it is a convenient way to control displays from a computer at a distance. If your installation will not use RS232 control, skip this section. You can control:

- Displays one at a time
- Several video walls separately
- All the displays in all the walls at the same time

Everything you can do with the remote, you can do with RS232 commands. Plus, you can send inquiries to the displays and find out the current settings and values.

RS232 connections are made with cables like Ethernet straight-through cables.

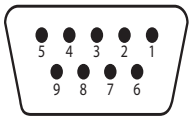
You need an adapter to go from the computer's 9-pin serial output connector to an RJ45 connector. Adapters of this type are readily available at computer and electronic supply stores. You will only need one adapter; all the rest of the connections will be RJ45 to RJ45 using the RS485 In and Out connectors. The adapter is not pre-wired. You will make three connections inside the adapter, as described below.

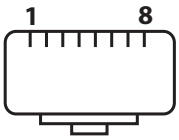
Note: It is important that the RJ45 cable has "straight through" connections. To see if your cable is correct, hold the two connectors side by side with the ends pointing in the same direction. Look at the sides of the connectors that do not have the locking tab. If the colors of the wires inside the connectors are the same left to right for both connectors, this is the correct cable. If the colors are mirror reflections of each other, it is the wrong type.

Wiring the adapter

To go from 9-pin D-sub serial connector on the back of the computer to an RJ45 connector, use a standard RJ45-to-9-pin adapter. Wire it internally as shown. The wiring shown for this adapter is correct for *straight-through* cables. Straight-through cables are wired 1-to-1, 2-to-2, etc.

	RJ45	9-pin
Yellow wire	6	3
Black wire	3	2
Green wire	5	5





RJ45 looking into the socket

Connecting RS232 Cables

1. Connect the 9-pin adapter to the serial output connector of the controlling computer. (This computer does not have to be the same one as the computer used as a picture source.) The serial output is sometimes called the Comm Port, and sometimes there is more than one.

2. Connect a cable from the RJ45 adapter to the nearest display's RS232 In connector.

Note: Some computers have an RS485 output. You can connect this directly into the nearest display's RS485 In connector.

Caution: If you have a WallNet device, it should be connected to the AUX RS232 port on the first unit of a daisy chain.

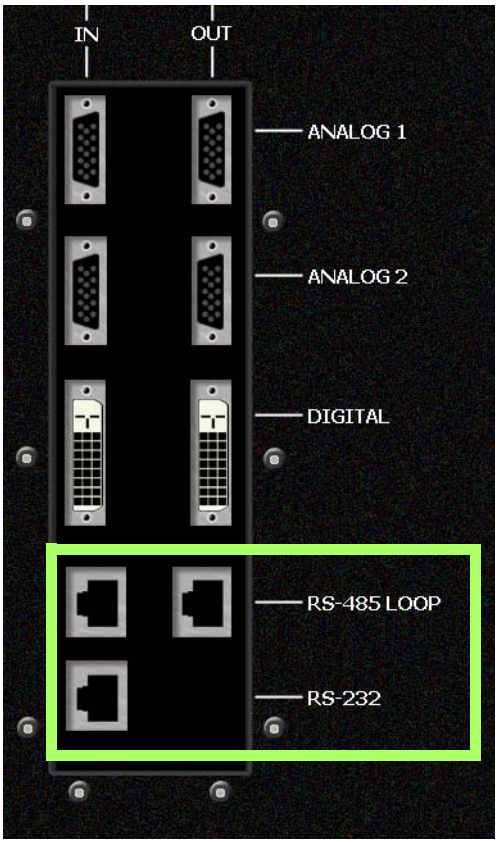
3. Connect this first display's RS485 Out connector to the next display's RS485 In connector.

Note: RS485 is used after the first display because the signal it carries is more reliable and less disturbed by electrical interference.

4. Continue in this way until all displays are connected.
   The order in which you connect the displays is *not* important. You can connect them in any order that is convenient and keeps the cable lengths to a minimum. The order of displays in the loop does not matter because each display in the array must have a unique address.

For more information about configuring RS232 communications, see "Serial Port Settings and Diagnostics" on page 119.

RS232 & RS485 port connections are on the control board



Note: The AUX232 input on the bottom of the control board is reserved for connection to the WallNet SiFi device server. If a WallNet is used, you *must* start the serial connection with the RS232 input on the *same* control board.

Installing Screens

Installing screens is a two-person job because they are heavy. Don't try to install them by yourself.

Unpacking a Screen

1 Using two people, remove the screen from the packing case. Grab near the corners as you lift the screen from the packing case.

Note: We suggest you save the screen packaging until the entire array is installed.

2 Cut open the protective envelope. Be careful not to scratch the screen or the frame.

Caution: The screen is heavy:
• The c50RP/c50RX screen weighs about 27lbs (12kg)
• The c67RP/c67RX screen weighs about 46lbs (21kg)
Also, the screen is delicate and expensive. Take care.

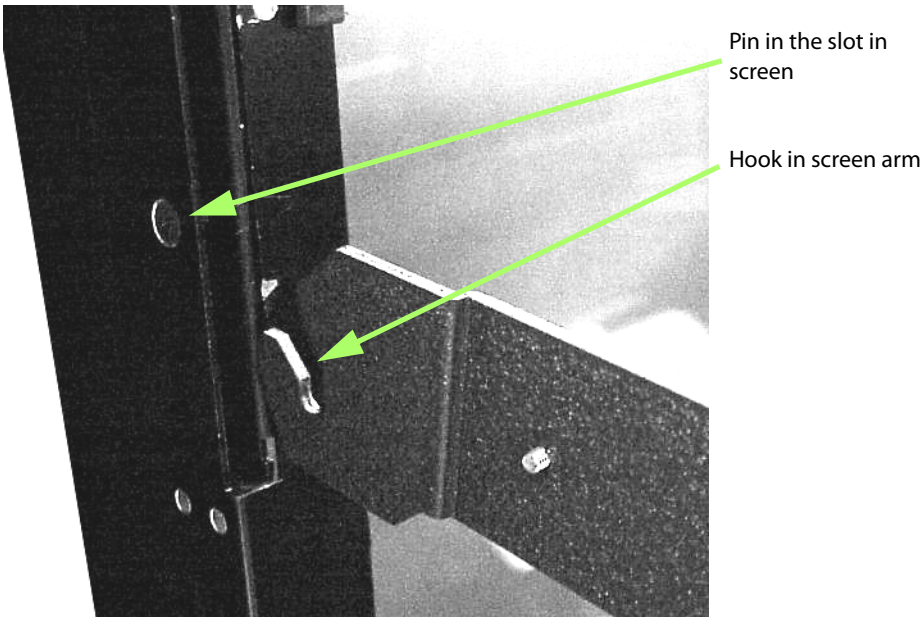
3 There are two slots in the back edge of the screen. The screen guide arms go into slots.

Note: There is a label on the bottom of the screen.

Installing a Screen

1 Prepare the center unit in the bottom row to receive a screen by pulling the support rails all the way out.

2 Hang the screen on the hooks. Using two people, lift the screen at the sides. Hang the screen on the screen guide hooks. It is easier to do this one side at a time, one person holding still, and the other person hanging the screen on the hook.



3 Push the screen all the way in.

4 Starting with the bottom corner, press the heel of your hand against each corner of the screen until the spring-loaded latches click into place.

Note: You may have to lift the screen a little to get guide pins on the screen brackets to fit into the holes in the back of the screen.

Caution: Don't hit the screen hard; it can break.

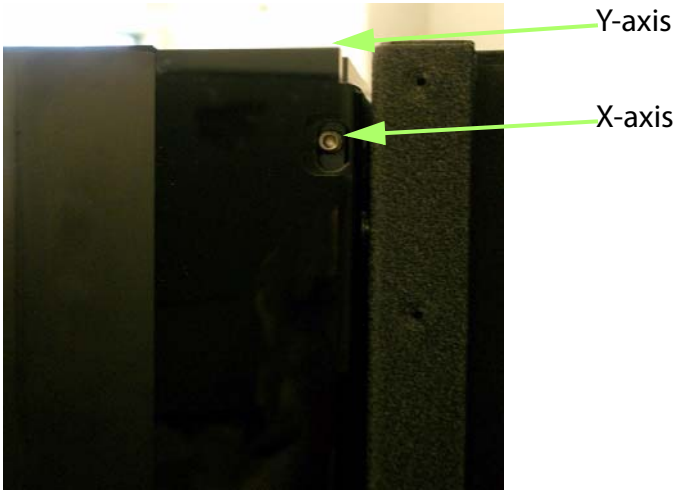
5 Continue installing screens from the center out until you have installed screens on an entire row.

6 Move to the next row up, and install a screen on the center unit.

7 Repeat steps **1** through **6** until all screens have been installed.

X-Axis and Y-Axis Adjustment

All screens will be shipped at a nominal position. However, you can make x-axis and y-axis adjustments at the top corner on both sides of the screen. So long as no other screen is next to the adjustment screw, these can be adjusted using a 3mm Allen hex wrench, without opening the screen.

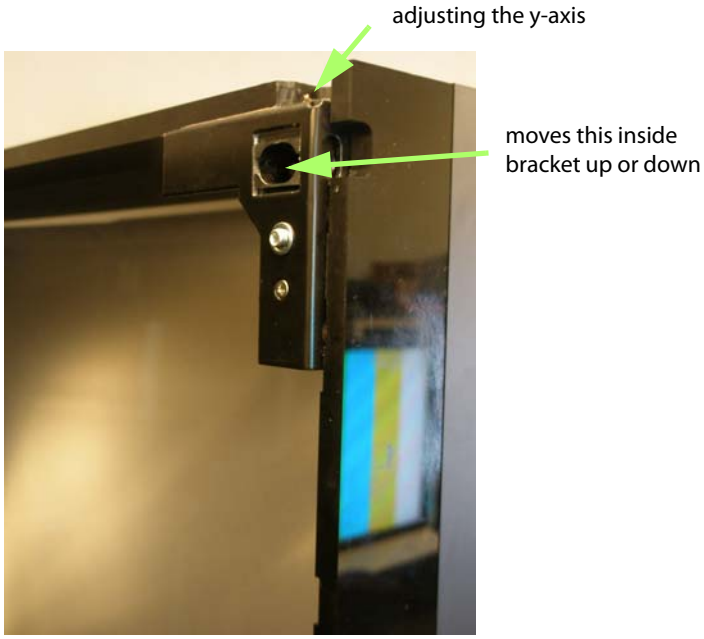


X-Axis Adjustment

The x-axis adjustment moves the screen right or left. It is only on the right side of the display. Before you adjust the x-axis, make sure the screen is pushed all the way to the left. To move the screen right, adjust (tighten) the x-axis screw clockwise. To move the screen left, adjust (loosen) the x-axis screw counter clockwise and then push the screen again to the left.

Y-Axis Adjustment

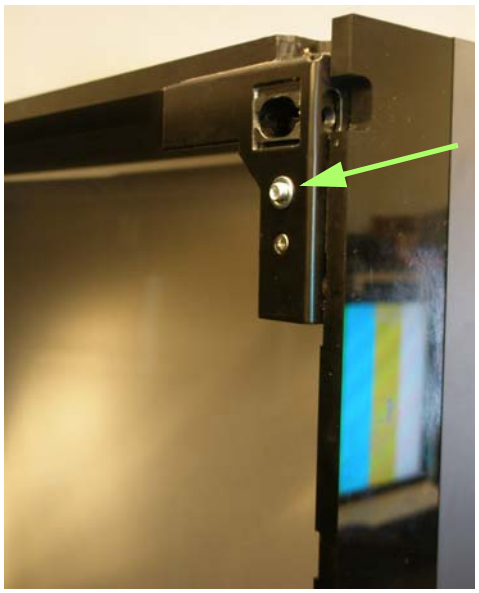
The y-axis moves the brackets on the inside top corners of the screen up or down.



To move the screen down, adjust the y-axis screws clockwise. To move the screen up, adjust the y-axis screws counter clockwise.

Z-Axis Adjustment

If the screens are not flat with each other, there are four z-axis adjustment screws, one at each corner of the inside edge of the screen. You must open the screen to make this adjustment. Using a 3mm Allen hex wrench, adjust the screw clockwise to move the screen towards the chassis. Adjust the screw counter clockwise to move the screen away from the chassis.



The arrow points to the top z-axis adjusting screw at the top of one side of the screen. There is another screw like this at the bottom of the screen.

Opening and Removing a Screen

Screens on the c50/67R have very thin mullions and "float." Each screen rests on brackets. When removing a screen, take care when removing it so it doesn't bump against other screens.

Note: Before you remove any screens, be aware that each screen is slightly different. Make note of which screen was installed on which display before you remove them so that when you replace the screens the correct screen goes on the correct display.

1 Using the remote, turn off the lamps of all units on which you need to remove the screen and allow the cooling fans to stop (approximately one minute) before opening the screen.

Aim the remote at each unit and press OFF to turn off the lamp.

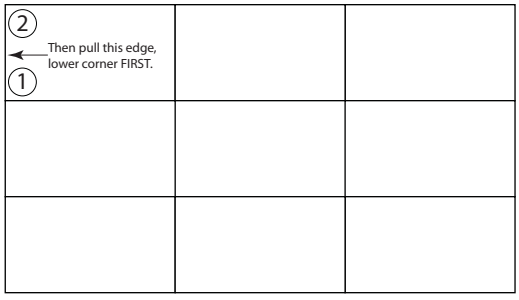
Note: When c50/67Rs are installed in a row, the screens are very close together. If you are removing a screen in the middle of the array, use caution as you pull it out.

2 Using a suction cup, remove the screen from the wall, pulling out steadily about 1/2" (12mm). The screen will pop out at this corner.

Note: Release the suction cup by pinching the two rubber posts together.

3 Pull the outer edge to release all the spring latches.

Pull outside lower corner, and then pull outside upper corner.



4 Pull the screen all the way out on the support rails.

Caution: When the screen is fully extended on the support rails, the unit could tip forward if not tied back to a support structure or wall, or anchored to other units in an appropriate fashion.

5 Lift the screen up off the support pins to remove it from the support rails.

Configuring a c50/67R

After you select the picture source, most of the rest of setup is automatic, although you can override the automatic settings and adjust them manually.

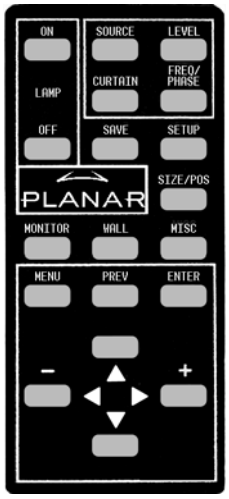
The source picture - from computer, video, DVD - is not always perfect in its size or resolution; it does not always conform exactly to a standard. The display can compensate for this.

You'll find it easier to configure your displays when you perform the steps in the following order:

- Color Balance the displays (See "Adjusting Color Balance" on page 67)
- Adjust Engine Alignment (See "Engine Alignment" on page 73)
- Select the Source (Picture) (See "Selecting the Source" on page 81)
- Adjust the Input Levels (See "Adjusting Input Levels" on page 87)
- Adjust Frequency and Phase (See "Adjusting Frequency and Phase" on page 93)
- Select the Scale Mode (See "Scale Mode Settings" on page 95)
- Adjust the Sharpness (See "Sharpness Settings" on page 101)
- Check the Image Position (See "Adjusting Position" on page 103)
- Adjust Scaling and Cropping (See "Zoom and Viewport" on page 105)
- Set up Tiling for the image on multiple displays (See "Tiling a Display" on page 109)

About the Remote

The remote control operates with IR (infrared) signals going to the IR receiver, which is behind the screen.



(Later, to prevent accidental adjustment of the display, you can disable the remote control function using an RS232 command.)

If the Remote Doesn't Work

- The batteries in the remote are dead or installed wrong.
- The remote was not aimed at the screen.
- Something is blocking the IR receiver in the display.
- IR remote action was disabled by an RS232 command.

Note: The remote control has a large spread of its IR radiation. It is difficult from a distance to control only one display in an array; step closer.

Adjusting Color Balance

Color Balance is used to match the colors of adjacent displays when several displays are arranged in an array. You may also use it to adjust the color of a single display.

Understanding Color Temperature

Different "pure white" light sources do not always have the same color. For instance, light from an incandescent bulb has more yellow than light from direct sunlight. "Color Temperature" is a way of measuring these color differences. In general, higher color temperature numbers are bluer or "cooler." You may have a reason for wanting your display to be a specific color temperature. For instance, if you are using the c50/67R in a television studio where you will be videotaping the content, you will want a low color temperature. The c50/67R defaults to the brightest setting possible, which is 100 in the RED, GREEN and BLUE lines under WHITE BALANCE. You may choose a different color temperature by setting it in the COLOR BALANCE menu.

Adjusting Color Temperature

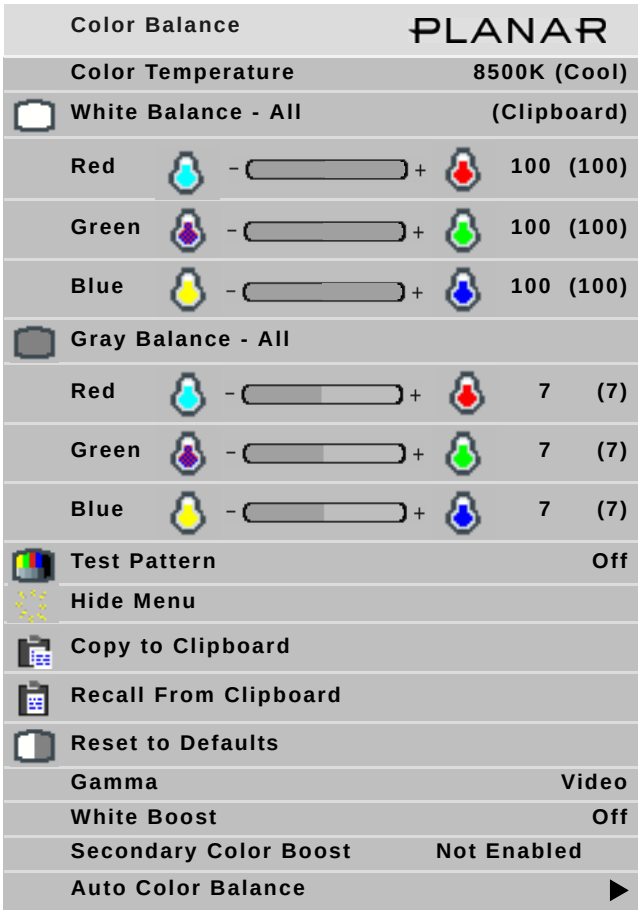
Select COLOR TEMPERATURE in the COLOR BALANCE menu and select from 3200°K (Warm), 5500°K, 6500ºK, 8500°K (Cool) and NATIVE.

Changing the color temperature changes the three WHITE BALANCE values. You can also change the WHITE BALANCE values individually to create a custom color temperature. Once you have changed the values, a new CUSTOM option is available on the COLOR TEMPERATURE line.

Color Balancing a Single Display

If you have only one display, the Color Balance controls can be used to set the color temperature of the single display.

To access the COLOR BALANCE menu, press MISC once on the remote.



Caution: It is suggested that you keep WHITE BOOST off. You cannot use it with ACB, and turning it on will make it more difficult to manually color balance a wall.

Auto Color Balancing (ACB) for Multiple Displays

Caution: To operate ACB, a WallNet box - a device server - must be connected to one of the displays in the wall. Installing this device server is covered in the WallNet booklet that comes with the device. This also explains how to use ACB.

ACB is a feature enabled for certain Planar displays that include an integrated color sensor. For these displays, WallNet can measure the colors on the wall and make adjustments to each display to match color and brightness over the whole wall. This fully automatic process preempts any image output for approximately 40 seconds to balance a wall of two cubes, plus 5-10 seconds per additional cube. ACB can be scheduled to occur after switching lamps.

Automatic color balancing can be performed by selecting the AUTO COLOR BALANCE line at the bottom of the COLOR BALANCE menu and pressing ENTER, or by commanding this action remotely from a web browser. From the browser it is also possible to command ACB to occur daily, weekly or monthly.

Manual Color Balancing for Multiple Displays

The object of color balancing is to make the individual displays in an array show the same colors. When you see a yellow car move across a video array from one display to another, you want it to have the same color for the whole trip, not change from yellow to tan to orange.

Colors vary slightly from one display to the next, because of slight variations in the lamps and DLP engines. This cannot be avoided, but you can compensate for it with color balancing.

Color balancing is subjective. It may seem strange at first, but it gets easier with practice. Fortunately, you don't have to match all the colors; you only have to match whites and grays.

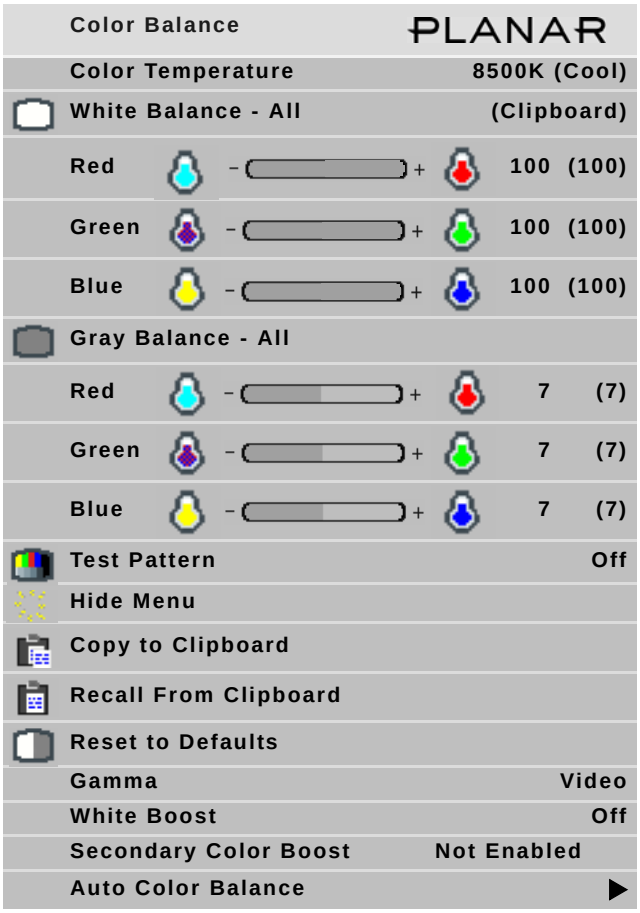
When you make all the displays look the same with white and gray, all the other colors will look the same. It is not necessary to achieve a perfect white or a perfectly colorless gray. It is only necessary that all the displays look alike when they display white and gray.

Caution: Never try to match the colors of the displays with the black and white level controls or with the video controls. You will not like the results if you do.

Caution: If you are color blind, even a little bit, do not manually color balance your array. Have someone else color balance the wall or use the optional Automatic Color Balancing feature (see "Auto Color Balancing (ACB) for Multiple Displays" on page 68).

1. Turn on all the displays in the array and let them warm up for at least five minutes. The lamps must be thoroughly warm before you color balance.

2 On each display, open the COLOR BALANCE menu. Do one of the following:
- Press MISC once on the remote.
- Press MENU on the remote, and select ADVANCED OPTIONS > COLOR BALANCE.



Note: If the array has never been color balanced, make sure you start with the NATIVE color temperature setting on each display. If you are not interested in achieving a specific color temperature, use NATIVE, which is the brightest. If the display has been color balanced before, it will display CUSTOM in the COLOR TEMPERATURE line, because the balance values don't match any of the pre-set color temperatures.

3 On each display, highlight TEST PATTERN and use the left or right arrows until the menu displays WHITE.

Note: Always use the internal Test Patterns for color balancing, not an external pattern.

4 When all displays are white, find the *least bright* display in the array. This will be the "baseline" display, and you will *not* adjust it. All other displays will be adjusted to this baseline display.
Why pick the "least bright" display? Why not pick the brightest and adjust to it? When the white value is 100, the display is as bright as it can get. You are adjusting for slight variations in lamp brightness.

5 Choose a display next to the baseline display and adjust its white values (red, green and blue) to make it match the baseline display. Concentrate on the center of the displays, not the adjacent edges. (If you can't bring these settings down to match the baseline, maybe you didn't choose the darkest display.) Do *not* adjust the gray values at this time.

6 Continue with other adjacent displays until all the displays have the same appearance when white. Be careful not to change the values of displays once you are satisfied with them. Select HIDE MENU to keep from setting other displays and allow you to see more of the white field. To unhide the menu, press ENTER.

Note: The menus will automatically turn off after a time determined in MENU OPTIONS (MENU > ADVANCED OPTIONS > MENU OPTIONS > MENU TIMEOUT). If MENU TIMEOUT is NEVER TIME OUT, the menus stay up indefinitely.

7 When all displays look the same when displaying the White test pattern, choose the Gray test pattern in all displays.

8 Choose any display as the new baseline display. It does not need to be the baseline display you used for white.

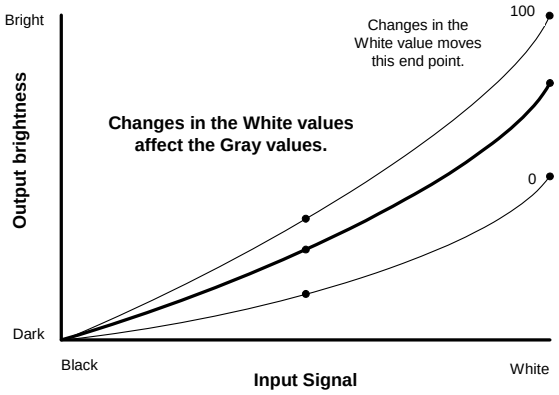
9 Adjust the gray values for all the displays until they match the baseline display. Do one display at a time. Again, match the center part of the picture, not the edges.

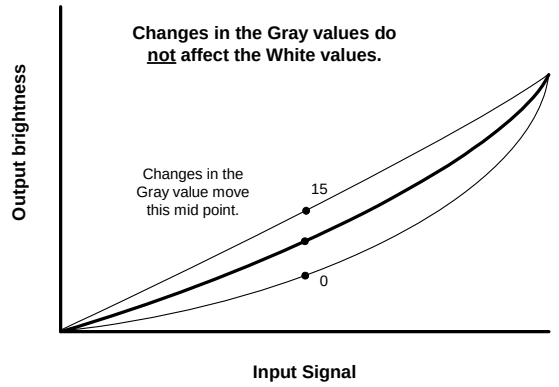
10 When all displays match in gray, close all the menus. The test pattern automatically turns off.

Tips for Manual Color Balancing

- It is suggested that you keep WHITE BOOST off. Using it will make it more difficult to manually color balance a wall.
- COPY TO CLIPBOARD will save all the current settings to a temporary memory. You can then make more adjustments to see if it gets better or worse. RECALL FROM CLIPBOARD will restore these saved settings. The clipboard is only for testing. These values are not saved when AC power is off.

Color Balance values are saved for all input sources in the same memory location. Color Balance is the same for all sources.




Changes in the Gray values do not affect the White values.
Output brightness
Changes in the Gray value move this mid point.
15
0
Input Signal

- Removing red has the same effect on hue as increasing blue and green together. The COLOR BALANCE menu slider bars have colored bulbs at each end to tell you what the effect will be of moving a color toward that end.
- Stand back from the display array and directly in front of it to get the overall view.
- Small changes are difficult to see at first, particularly with white. When you don't know which color to change, pick one at random and change it 4 or 5 steps. The result will be either better or worse. If worse, go the other way with that color. If that is also worse, put this color back where you started and do the same with another color. If everything you do makes the match worse, you must be close to the ideal point.
- You may find it easier to color balance displays using ***Cube Control 2***, a software utility available from Planar's website. For more information, see "Accessing Planar's Technical Support Website" on page 141.
- If you have replaced a lamp and need to rebalance the wall, be aware that the lamp you replaced may have been the dimmest one. If this is the case, you will need to increase the brightness of the other cubes, rather than decreasing the brightness of the cube with the new lamp.

Engine Alignment

Engine *alignment* means to align the optical engine so its image is centered on the screen, covers the screen completely, and doesn't spill off the screen. This is a mechanical adjustment that you will do with the remote control, controlling the alignment motors.

Picture *position* means to move the picture on the screen electronically. This is an electronic control.

Note: The image is aligned at the factory, and may not need any adjustment.

Understanding How Adjustments Work on c50/67R

The c50/67R provides an extraordinary range of adjustments: Rotation (Left Side and Right Side), Horizontal position, Vertical Trapezoid and Horizontal Trapezoid, and Image Size. To make these adjustments, you must understand how they work; six motors move a floating optical engine carrier in x-axis (left/right), y-axis (up/down) and z-axis (in/out). The motors also move the optical engine in roll, pitch and yaw.

Aligning the Image on the Prime Display

Typically, the Prime display is the center-most display. If you have a wall of 2 x 2, you can choose any of the four displays as the Prime display. You align the image on the Prime display first because all the other displays in the array will be aligned to it. Aligning the Prime display is crucial because any misalignment here will be exaggerated as you go farther away from the Prime display.

All of these adjustments are done with an internal test pattern: the Grid (MAIN MENU > ADVANCED > ENGINE ALIGNMENT). This the only test pattern used for these processes. You cannot do this with an external picture. You are moving the Optical Engine so that it aims correctly at the screen. If the Optical Engine is not aligned to the screen and there is a quarter of an inch of black on the right side of the screen, you can display any picture you want and move it any distance you want, and it will never cover that black area because there is no light shining on it.

There are four general guidelines for engine alignment:

a Align and size the image so the same number of pixels are hidden behind the mullion on all four sides.

b Adjust Trapezoid first, Size second, and Position last.

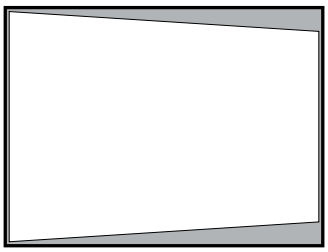
c If the image is only a little bit out of alignment, adjust that one misalignment.

d Align the image with other cubes in the array.

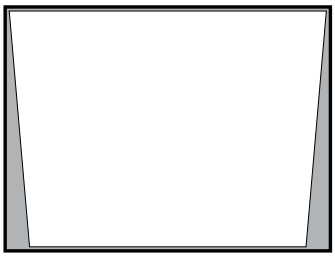
Adjust for Trapezoid (Keystoning) First

The first thing you must do is decide what is out of alignment:

- Is the left side wider than the right? Adjust the image using HORIZONTAL TRAPEZOID.
- Is the bottom narrower than the top? Adjust the image using VERTICAL TRAPEZOID.
- Is the image is too high or too low on the screen? Adjust the image position using LEFT and RIGHT.
- Is the image too far to the left or right? Adjust the image position using HORIZONTAL.



Horizontal Keystone/Trapezoid



Vertical Keystone/Trapezoid

- If you suspect the image is keystoned, reduce the IMAGE SIZE down to make the picture smaller so that it completely fits within the frame.

1. To change image size on the ENGINE ALIGNMENT menu, select IMAGE SIZE. To make the image smaller, press and hold the – button.
2. Reduce the size until you have a black edge approximately one pixel wide all the way around.
3. Adjust the keystone. Select either HORIZONTAL TRAPEZOID or VERTICAL TRAPEZOID. Use the -/+ keys to adjust the image.

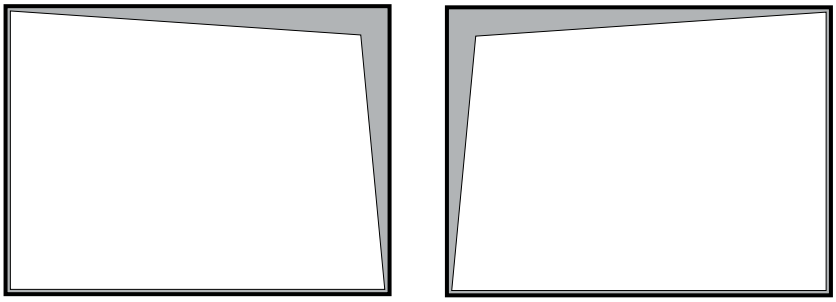
4 Use the HORIZONTAL adjustment to move the image left or right. Use the LEFT and RIGHT adjustments to move the image up or down.

5 When the image is perfectly aligned in the frame, adjust the IMAGE SIZE. If you have followed the steps above, you'll need to make the image larger, so press and hold the + key to increase the image size.

If You Can't Align the Image

It is ***very unlikely*** that you will need to adjust the mirror to correct an image problem. However, if you have already adjusted the image using the on-screen menus and one corner seems pulled in or pushed out and the other corners are not affected, you may have to adjust the nuts on the rear of the unit.

Caution: Before you adjust the mirror mounting nuts, See "Engine Alignment" on page 73.



1 There are mirror adjustment nuts. If the corners are affected you must tighten or loosen the nuts that correspond to the affected image:
   - Loosen the nut to make the image smaller
   - Tighten the nut to make the image larger

2 Use two people to do this: one person to turn the nuts and the other to watch the effect on the image.

Tip: Carefully note the amount you turn the nuts so you can easily return to their original settings.

Aligning the Image on an Array

When a picture is spread over an array, you can only adjust the picture electronically by whole pixels; this means the picture can't be moved by half a pixel, which is what you might need to do to compensate between two units, each displaying part of a picture.

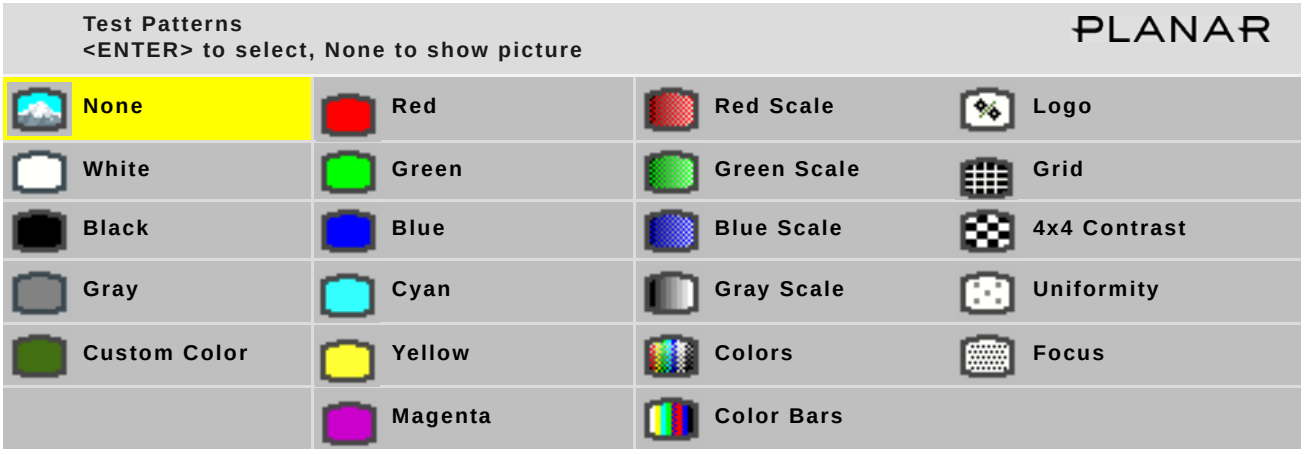
To align a picture on an array, you must align the images of all the displays to the image on the Prime display.

1 Select the Prime display.
If the image on the Prime display did not require adjustment, be sure you familiarize yourself with the controls to adjust the image before continuing. Read through "Understanding How Adjustments Work on c50/67R" on page 73 to learn how to use the controls.

	Align the picture on this display first; This becomes the Prime display	

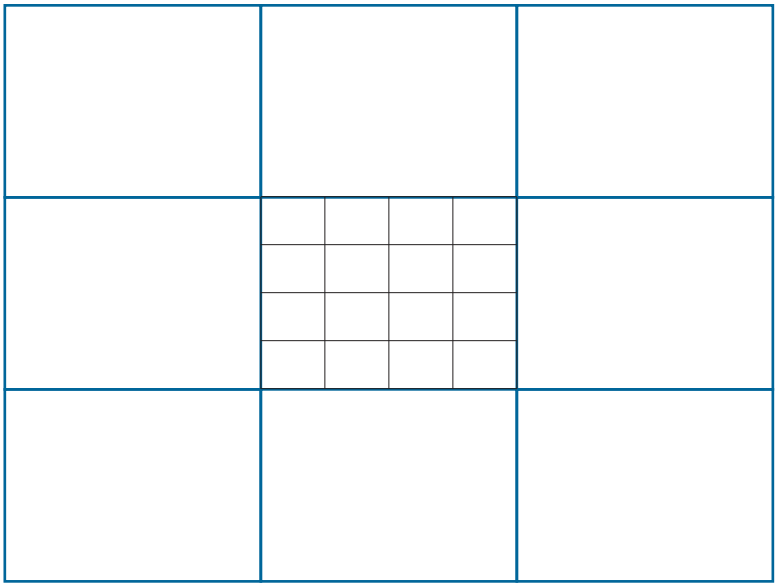
2 On the Prime display, open the ENGINE ALIGNMENT menu (MAIN > ADVANCED OPTIONS > ENGINE ALIGNMENT).

3 Select TEST PATTERNS.



4 Press the + button to select GRID.

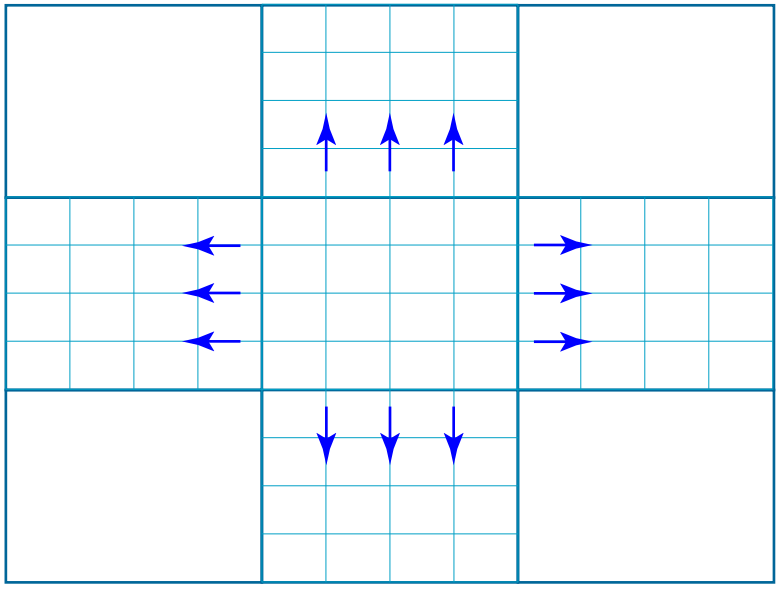
Show the Grid pattern on the Prime display



5 Using the detailed substeps below, align grid to grid, in one direction at a time. You will align the grid on one display with the grid on another display.

Show the Grid pattern on these displays …

…then align the displays radiating out from the Prime display in a plus-sign "+" direction, in one axis only



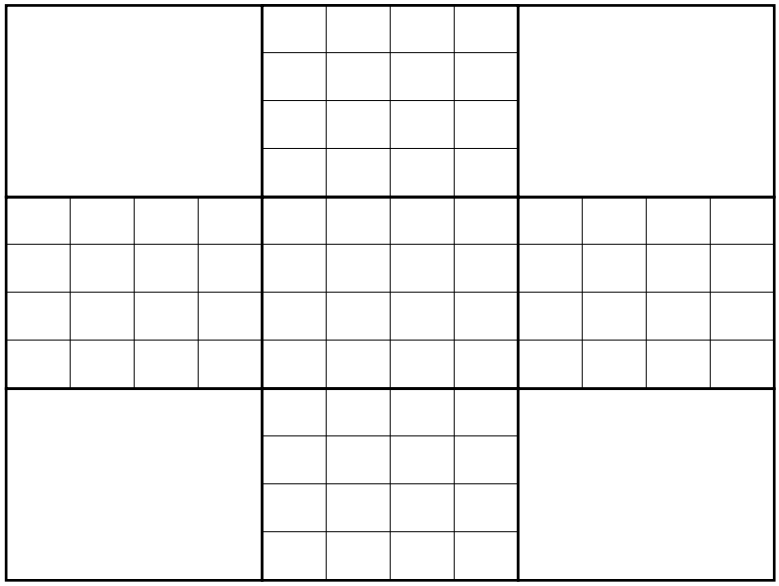
a Select a display above, below, left, or right of the Prime display (touching the Prime display in a plus-sign shape), and show the Grid test pattern on it.

b Align the grid on the second display with the grid on the Prime display.

c Repeat steps a and b for the other three displays of the plus-sign shape.

For this part of the alignment process, only align a single grid of the Prime display with the unit to the left, right, top, and bottom. We call this single-grid alignment.

It is intuitive to make the grid lines match: alignment (or misalignment) is easy to see and to correct. Since the screen is completely covered with pixels, you don't need to be concerned about how many pixels are hiding in the borders. The intent of this method of alignment is linearity of the three center grid lines across all the screens in the array, whether those are horizontal or vertical grid lines. It doesn't matter what the alignment is as long as the image is linear.

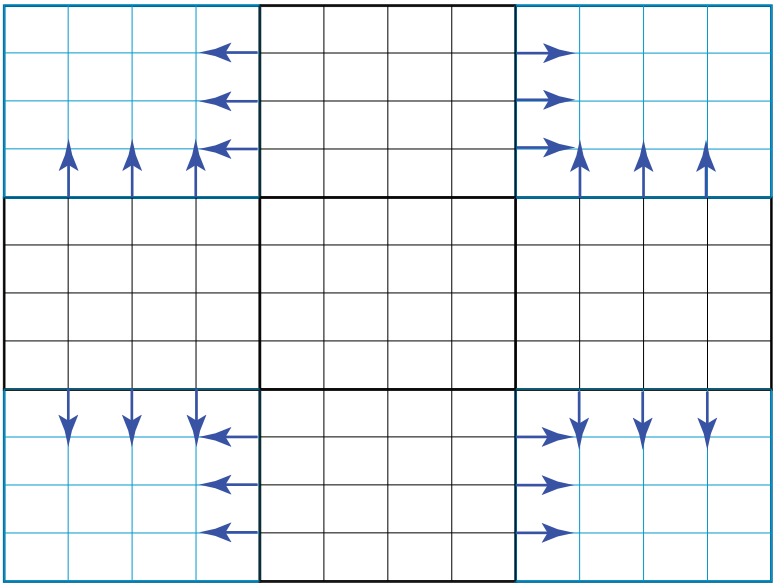


When the grid patterns on the "plus sign" displays align with the grid pattern on the center "Prime" display, a picture displayed across these units will look aligned

6 Next, align the “corner” displays with the grids that have already been aligned. This is a bit trickier because you must align two sets of grids, which we call dual-grid alignment.

Show the Grid pattern on these displays …

…then align each of the “corner” displays in two directions; with the grid lines on the displays above or below and to the left or right



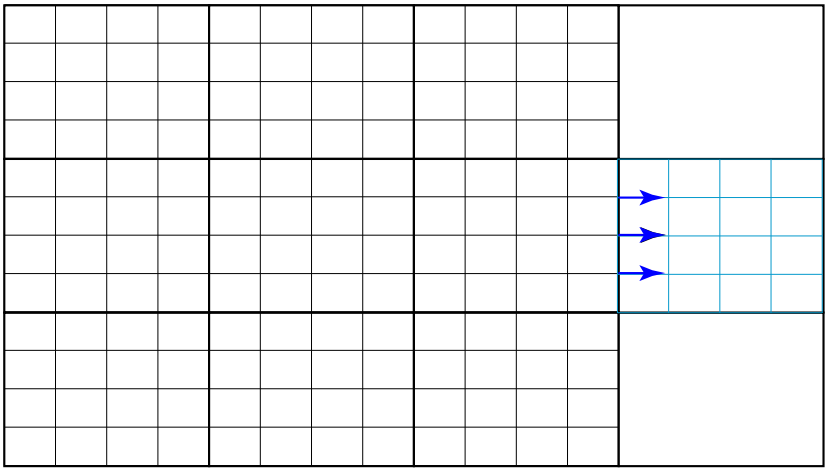
The “corner” units in the example must be aligned to the grid above or below them and then to the grid to the left or right of them.

7 If you are aligning a 3 x 3 array, you are finished.

8 If you have a wider or taller array, you must extend the alignment to the next row up or to the next column across.

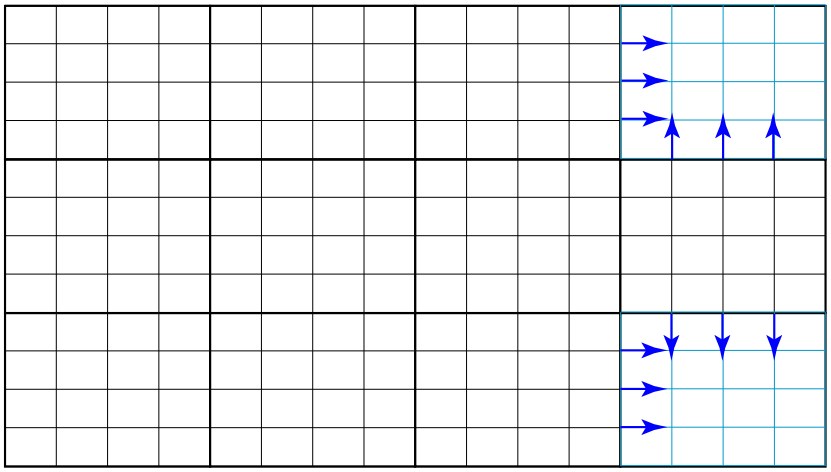
At this point, you might get tripped up. Don’t try to make the next column (or row) three single grid alignments; that is not what you want to do.

9 Extend the alignment in one direction along the row or column containing the Prime display. As in the illustration below, the center display in the right-hand column is aligned with the display in the same row as the Prime display, using single-grid alignment.



If an array has more units than the 3 x 3 wall pictured in this and the preceding examples, simply extend the alignment in the same fashion: extend in one direction at a time and align the new display with the previously aligned display.

10 Then align the displays above and below that display using dual-grid alignments.



Then extend the alignment from the second, adjacent direction.

Selecting the Source

Selecting the source means choosing the input connector from where the picture is coming. Selecting the source (picture) manually is usually faster than using the SOURCE button.

You'll chose from the connectors shown in the table below, depending on whether you have installed a VIM.

Connect the power cord and turn on the power switch. If the power was already on, and the lamp is off, press the remote ON button.

Computer Sources

Use the HD15 connector for standard analog inputs, the type used for years with computers. For digital inputs, use the DVI connector. Either of these accept pictures of the following common standards as well as many, many others:

Type	Resolution
VESA	640 x 400
VGA	640 x 480
SVGA	800 x 600
XGA	1024 x 768
SXGA	1280 x 1024
WXGA	1360 x 768, 1366 x 768
SXGA+	1400 x 1050
UXGA	1600 x 1200
HD1920	1920 x 1080

Component Video Sources

Component video sources are assumed to be YPbPr and the colorspace is set accordingly.

Note: HDCP (High-Definition Copy Protection) is not supported.

Composite Video and S-Video

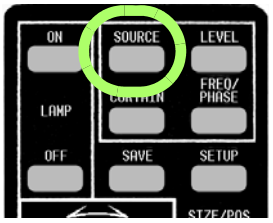
These two inputs accept NTSC and PAL. The composite connector also accepts SECAM video.

SD/HD SDI

This input accepts NTSC, PAL, 720p and 1080i.

Automatically Selecting the Source

1 Aim the remote at the screen and press SOURCE.

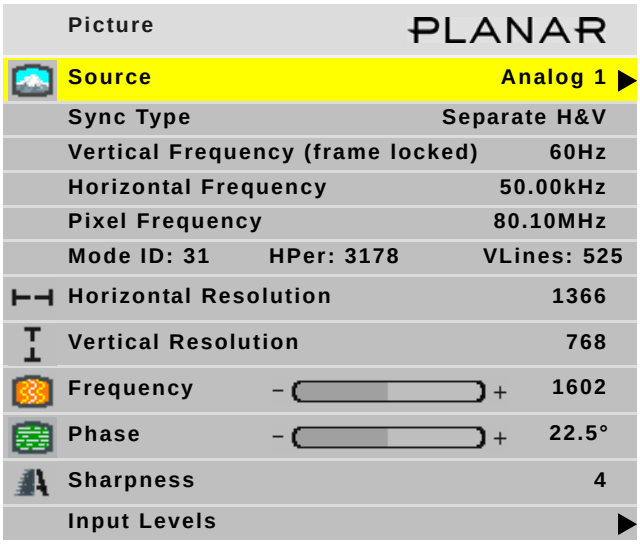


- **a** The display looks at each of the connectors and stops on the first one that is receiving a valid picture.
- **b** If this is successful (it may take 10 seconds) *stop here*.
- **c** If you have several sources connected, press SOURCE again to go to the next one with a picture.
- **d** If you get no picture or have other trouble, follow the steps in "Manually Selecting the Source".

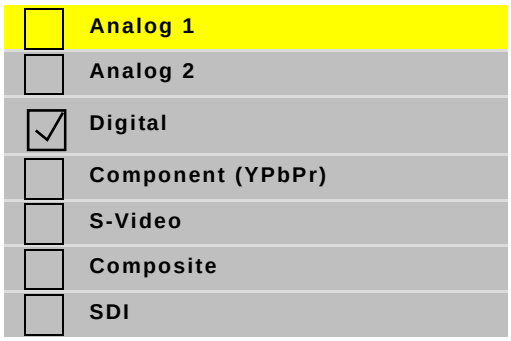
Manually Selecting the Source

1 After the display is on, press FREQ/PHASE on the remote. This opens the PICTURE menu.

2 Using the up/down arrows, select the SOURCE line and press ENTER.



3 The SOURCE popup menu displays to the right of the PICTURE menu.



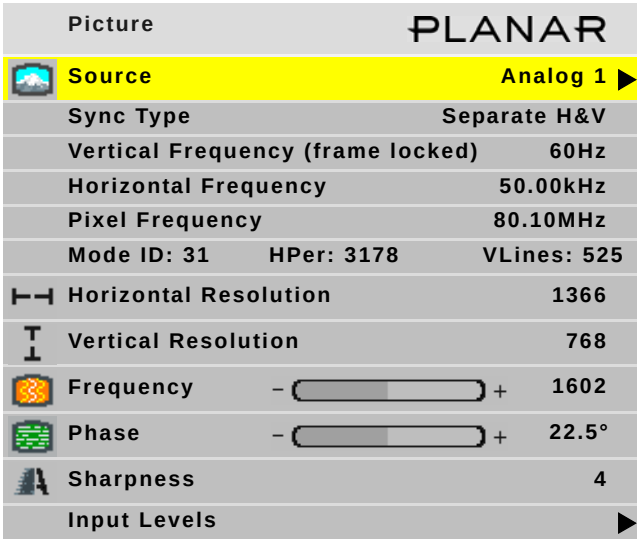
Note: If the display does not have a VIM (Video Input Module) installed, only the first three items will appear in this menu.

4 With the arrow keys, select the input connector you want and press ENTER. Within a second or two the display analyzes the picture, adjusts to it, and displays it. If you see no picture:

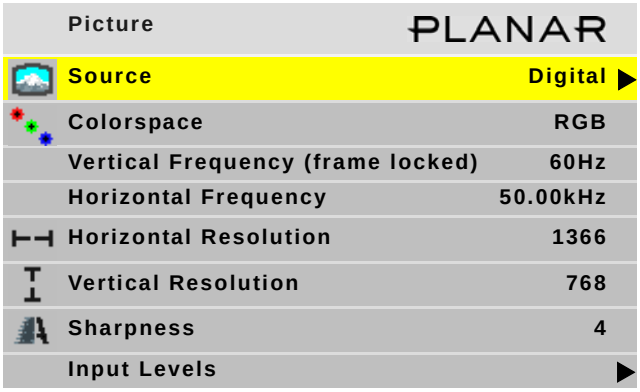
- **a** If you see an "out of range" message on the display, the input from the source cannot be displayed. Try changing what the source is outputting.
- **b** If you see a "source absent" message on the display, the data from the source is not reaching the display. Try disconnecting and reconnecting the cables between the source and the display, and make sure the source is powered on. If the source is a laptop, ensure that the VGA output on the rear of the source is enabled.
- **c** If no message is displayed, maybe the source has timed out and is displaying a blank screen.

5 The next pictures show examples of the how the PICTURE menu appears when different sources are selected. When you are finished, press MENU.

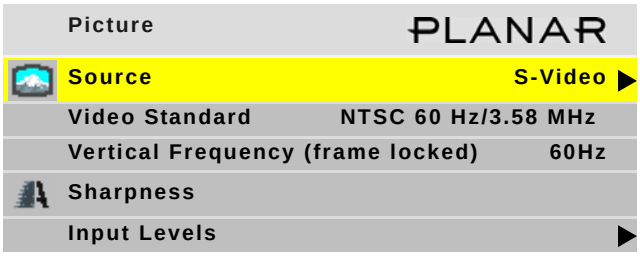
- **Analog 1 and 2**



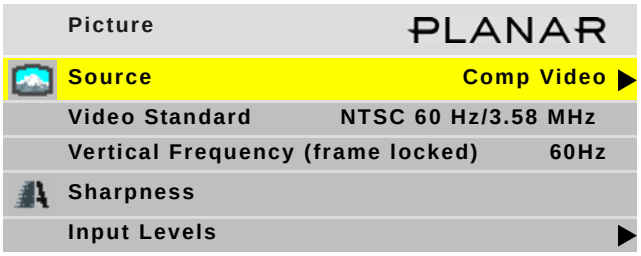
- **Digital**



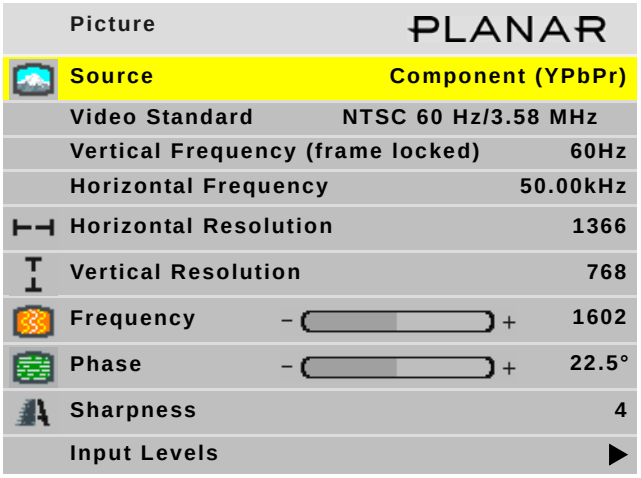
- **S-Video**



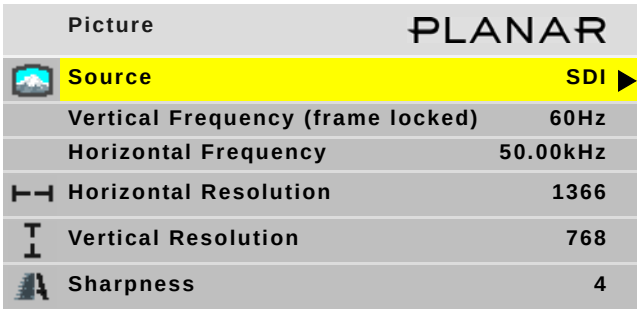
- **Composite**



- **Component (YPbPr)**



- **SDI**



Note: For additional information about source selection, see "Preferred Source Detection" on page 112.

Note: At this point, the picture may not be aligned properly on the screen. See "If You Can't Align the Image" on page 75. The problem could also be that the display is using the wrong resolution or frequency. Try adjusting Position slightly, or adjusting Frequency in the PICTURE menu.

Adjusting Input Levels

For all sources, adjusting to the source's picture means learning what that source means by black and white.

For analog sources, black is supposed to be a voltage of zero coming from the computer's video card, but it almost never is. White is supposed to be a voltage of 0.7 volts, but it usually isn't either.

For digital sources, black is supposed to be a code of 0, but in some cases it is a code of 16. White is supposed to be a code of 255, but in some cases it is a code of 235.

The Input Level adjustment process asks you to provide a picture from the source that is black, then one that is pure white. With these, you can quickly and automatically make the display "learn" what *this* source means by black and white.

The result? Good pictures, using all the dynamic range of color coming from the source.

Note: For Input Levels, you must use the computer or source you will use for the program. For example, don't make this adjustment with your work laptop and then switch to another computer for the display's program of pictures.

Adjusting Levels for Analog Sources

This section applies to Analog RGB (computer) pictures only. The levels are best adjusted semi-automatically.

Why Adjust Levels?

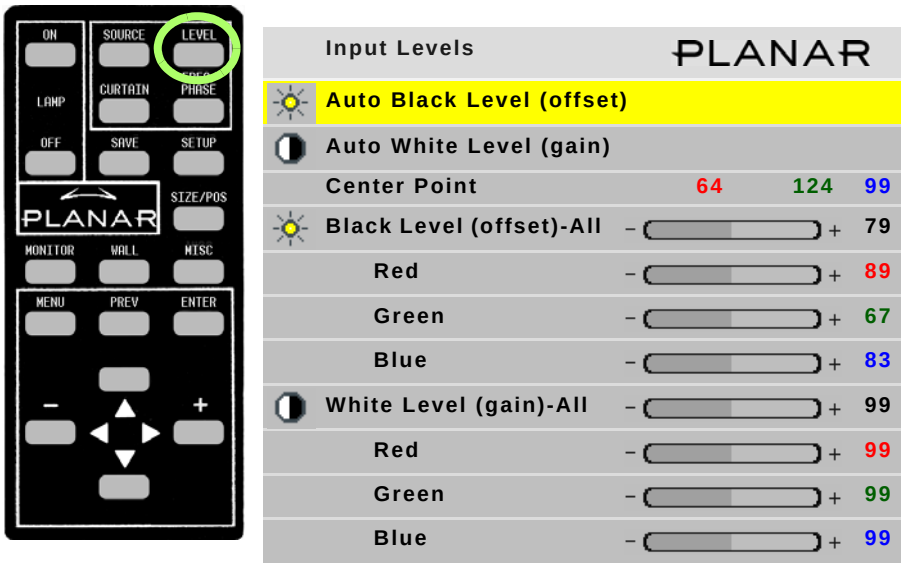
For Analog RGB pictures, the levels for black and white vary from one computer to another, or from one video processor to another. They even vary between video outputs from a multiple-output video card in a computer.

Your pictures will not look their best on the display until you adjust for these differences. This is *not* about adjusting color or contrast. It's about telling the display what the computer or processor means by black and by white.

Semi-Automatic Level Adjustment

1 Select a source in the PICTURE menu.

2 To access the INPUT LEVELS menu, press LEVEL on the remote.



3 From the computer source, display an all-black picture. *This must come from the computer source that will be used for the program.* We suggest you display a black screen using the Windows Paint program.

Note: Black Level *must* be done before White Level.

4 In the INPUT LEVELS menu, select AUTO BLACK LEVEL and press ENTER. This menu line says "Working…" until the process is complete.

Note: When doing Auto Black and Auto White with an interlaced analog input, the color of the picture will change while it is working and then will change back to normal.

5 From the computer source, display an all-white picture.

6 In the INPUT LEVELS menu select AUTO WHITE LEVEL and press ENTER. Wait for "Working…" to disappear.
The display is now adjusted to the black and white levels of *this* computer using *this* video card. If you change computers or video output cards in the computer, you must do this again.

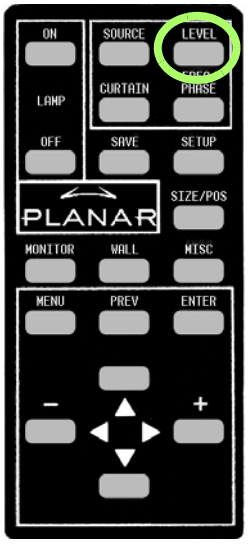
7 Although it is not required, we recommend that you save the configuration to a memory slot. (See "Saving Configurations" on page 126.)

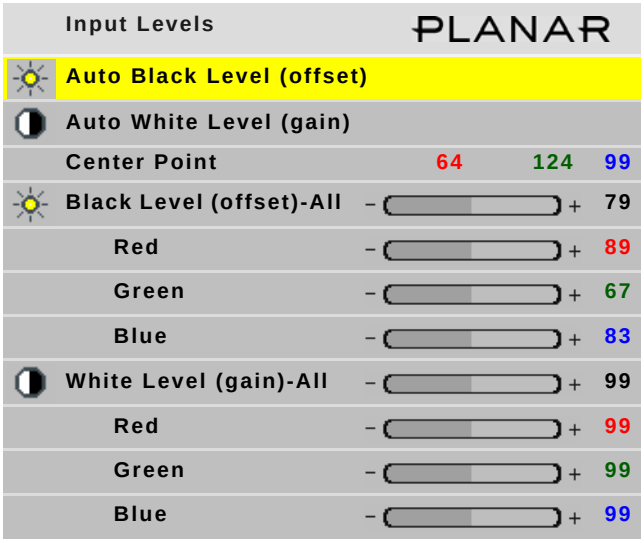
8 If you have more than one source coming through the same connector, adjust Input Levels for each source.

Manual Level Adjustment

1 Select a source in the PICTURE menu.

2 To access the INPUT LEVELS menu, press LEVEL on the remote.




Input Levels
PLANAR
Auto Black Level (offset)
Auto White Level (gain)
Center Point 64 124 99
Black Level (offset)-All – + 79
Red – + 89
Green – + 67
Blue – + 83
White Level (gain)-All – + 99
Red – + 99
Green – + 99
Blue – + 99

3 Display an all-black picture from the source computer.

Note: Black Level *must* be done before White Level.

4 In the INPUT LEVELS menu, select BLACK LEVEL and adjust it up and down with the -/+ keys to make the three CENTER POINT values go to zero. Once any value reaches zero, use the individual colors under BLACK LEVEL to adjust the other two values to zero.

5 Display an all-white picture from the source computer.

6 Adjust WHITE LEVEL (GAIN) until the CENTER POINT values go to 255. Once any value reaches 255, use the individual colors under WHITE LEVEL to adjust the other two values to 255 (or 254).

7 Although it is not required, we recommend that you save the configuration to a memory slot. (See "Saving Configurations" on page 126.)

8 If you have more than one source coming through the same connector, adjust input levels for each source.

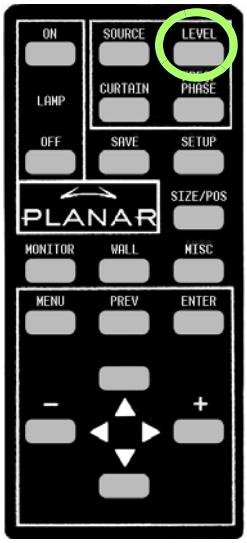
Adjusting Levels for Digital Sources

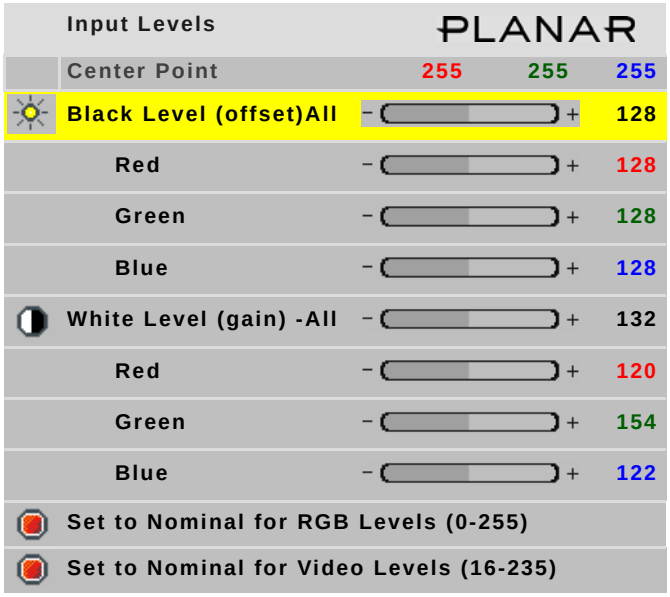
Caution: These controls are advanced level controls and should not be adjusted unless you have been instructed by the factory or are familiar with black level adjustments.

Digital computer sources do not normally need adjustment, but the controls are there if you need them. They are used to correct the digital blacks that come from video cards that have incorrect levels.

1 Select a source in the PICTURE menu.

2 To view the INPUT LEVELS menu, press LEVEL on the remote. (The INPUT LEVELS menu looks different for different colorspaces. The INPUT LEVELS menu for Digital RGB sources is shown below).




Input Levels
PLANAR
Center Point 255 255 255
Black Level (offset)All – + 128
Red – + 128
Green – + 128
Blue – + 128
White Level (gain) -All – + 132
Red – + 120
Green – + 154
Blue – + 122
Set to Nominal for RGB Levels (0-255)
Set to Nominal for Video Levels (16-235)

3 If you have changed black and white levels, select the SET TO NOMINAL FOR RGB LEVELS line to change them back to the default. This is the default for most sources.

4 It would be rare for you to adjust black and white levels for a digital source. However, depending on the source, what black and white "mean" can be different. In most cases, black will be 0 and white will be 255. However, for some sources, such as DVD players, black can be 16 and white can be 235. If this is the case, select the SET TO NOMINAL FOR VIDEO LEVELS line and press ENTER. This will change the black and white levels to the required values to correctly display the range of colors in the display.

5 Although it is not required, we recommend that you save the configuration to a memory slot. (See "Saving Configurations" on page 126.)

6 If you have more than one source coming through the same connector, adjust input levels for each source.

Adjusting Levels for Video Sources

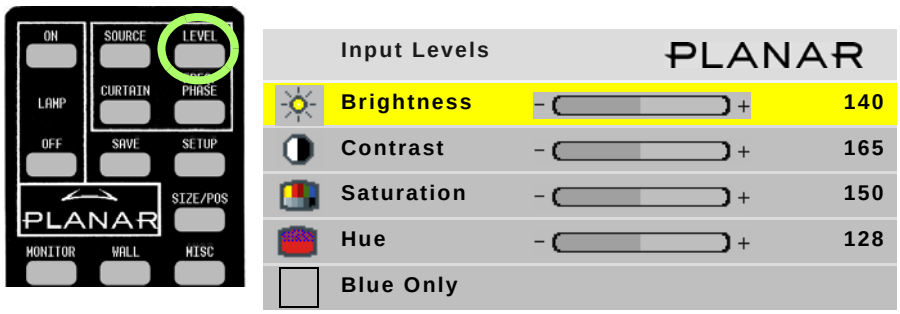
Video sources are best adjusted if a color bar test pattern is available from the video source: the DVD or VCR player. If you do not have access to a color bar test pattern, you will have to adjust the picture by eye from the video source using the INPUT LEVELS menu.

Note: When a video source is selected, Auto Setup Options are not available. Adjustments must be made manually.

Adjusting the Picture With Color Bars

1 Select a source in the PICTURE menu.

2 To access the INPUT LEVELS menu, press LEVEL on the remote.



Note: These controls are also used for analog sources when you select component video.

3 If possible, use a SMPTE color bar pattern from the video source you will use for the program material.

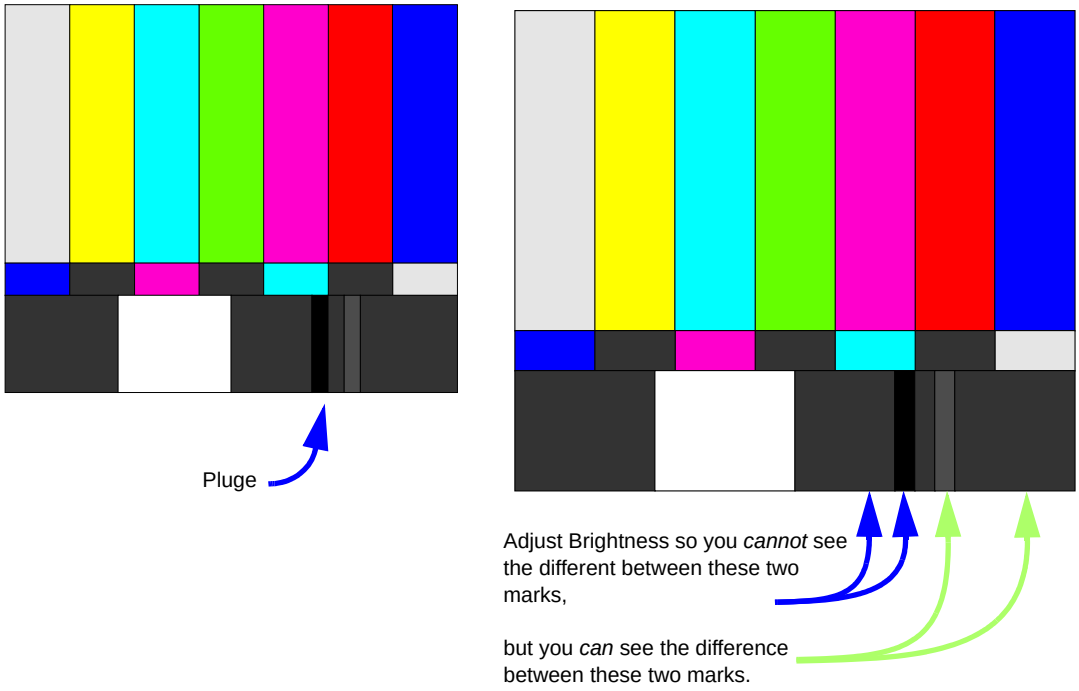
4 In the INPUT LEVELS menu, check BLUE ONLY. You should only see the alternate color bars, all of them blue.

5 Adjust SATURATION to make the outer two color bars match. Match them in brightness; they will already match in color.

6 Adjust HUE to make the inner two color bars match.

7 Uncheck BLUE ONLY.

8 If the color bar pattern has a pluge, you can use it to adjust Brightness. Pluge stands for Picture Line-Up Generation Equipment. A pluge is used to calibrate the black level on a video monitor.


Pluge
Adjust Brightness so you *cannot* see the different between these two marks,
but you *can* see the difference between these two marks.

9 Although it is not required, we recommend that you save the configuration to a memory slot. (See "Saving Configurations" on page 126.)

10 If you have more than one source coming through the same connector, adjust input levels for each source.

Adjusting Frequency and Phase

Frequency and Phase are mostly adjusted for computer sources and *must* be made using the computer that has, or will have, program content. Although Frequency and Phase can also be adjusted for component sources, it is not usually necessary.

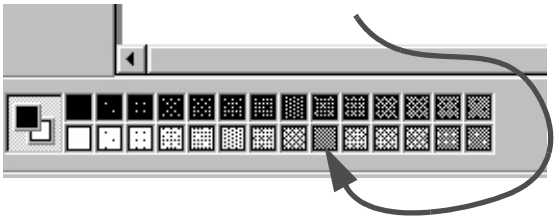
If you press the SETUP button, the automatic adjustment of Frequency and Phase is usually good enough. (See "Auto Setup Options" on page 116.) If the image shows vertical banding, adjust the Frequency. If the image has noticeable horizontal streaks moving through the image, adjust the Phase. If automatic adjustment is not good enough, adjust it manually. (See "Adjusting Frequency Manually" on page 94.)

Note: Auto Setup Options rely on the content displayed on the screen. You will get best results with something that has a lot of changes, such as a checkerboard pattern.

Making a Checkerboard Pattern With Paint

You will need to display a checkerboard pattern from the source computer. You can make one with the Windows Paint program.

1. Choose Image > Attributes to open a dialog box.
2. In the Units section, choose pixels. In the Color section, choose Black and White.
3. Set the Width and Height in pixels to match the *native* resolution of the Planar display.
4. When you click OK, the program gives you a warning about losing color. Click Yes.
5. At the bottom of the window, click on the checkerboard pattern. This is the 9th box from the left on the bottom row.



6. Choose the paint bucket icon and click in the picture area. It will fill with a checkerboard pattern.

7. Save this picture as a bit map (.BMP) file to the hard drive so you can use it again.

Adjusting Frequency Manually

1. Press FREQ/PHASE on the remote. This opens the PICTURE menu. Confirm that the source is ANALOG.
2. Display a checkerboard pattern from the computer.
3. Select FREQUENCY in the menu and use the -/+ keys to change the Frequency.

Don't worry about the number that appears in the menu. Look at the screen. As the Frequency is moved away from the ideal setting, more and more vertical bands will appear in the picture. Adjust Frequency so there are no vertical bands.

Note: Be sure there are no zoom adjustments in effect when adjusting frequency. If there are, you will not be able to get rid of all the vertical bands.

Adjusting Phase Manually

1. With the checkerboard pattern still on the screen, select PHASE in the menu.
2. Adjust the Phase with the -/+ keys on the remote. As the Phase changes, at some points you will notice more horizontal streaking. Find a point that has no streaking or minimal streaking. There is usually a fairly broad range of no streaking, so settle for the point in the middle of this range.

Aspect Ratio Settings

The aspect ratio of any picture is its width divided by its height. W / H = Aspect Ratio

The native aspect ratio of the c50/67R is 1.33, which is sometimes referred to as 4:3. This is the SXGA+ (c50RP/c67RP) or XGA (c50RX/c67RX) picture format.

For c50RP/c67RP: 1400 x 1050 pixels = 1.33

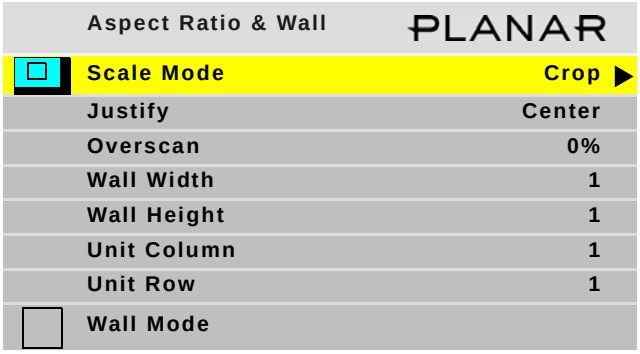
For c50RX/c67RX: 1024 x 768 pixels = 1.33

Standard television, VGA, SVGA, and XGA signals are 1.33. Movies from DVDs vary depending on the original film format, but are often 1.85. The larger the number, the "wider" the picture seems.

When the incoming picture is a different aspect ratio from the screen, the display gives you six choices (see SCALE MODE submenu page 96) to make it fit.

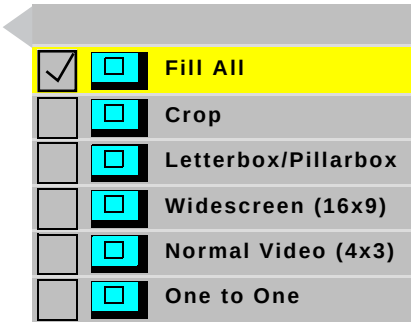
Scale Mode Settings

1 To select the Scale Mode, press WALL on the remote to display the ASPECT RATIO & WALL menu.



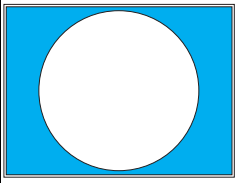
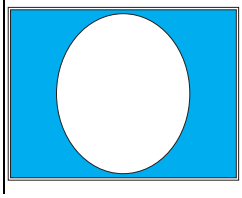
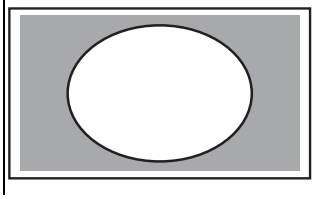
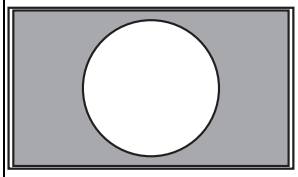
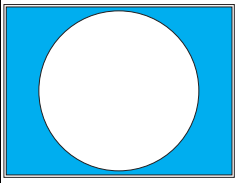
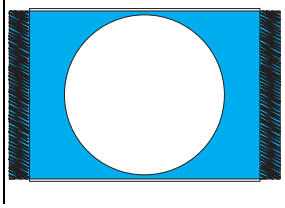
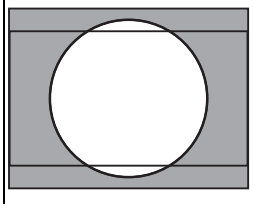
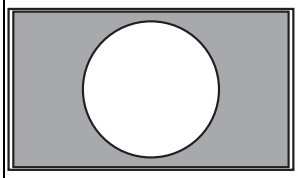
Note: If the display does not have an Option key installed, this menu looks different. For more information, see "No Option Key" on page 99.

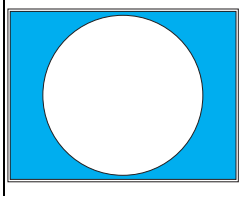
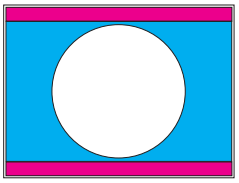
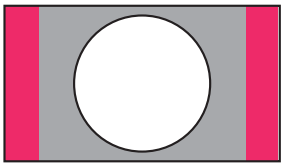
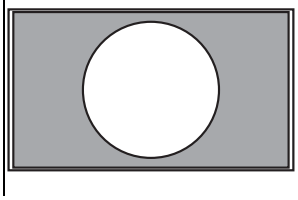
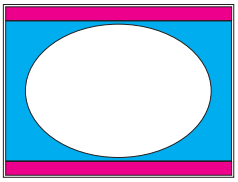
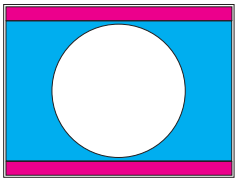
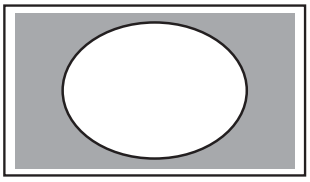
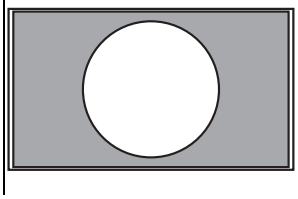
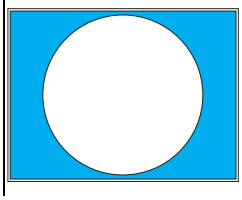
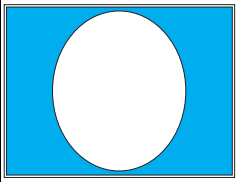
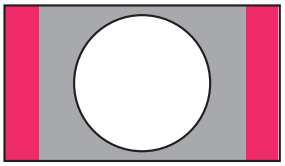
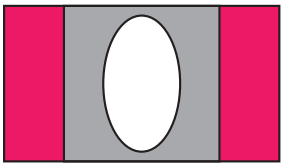
2 With SCALE MODE highlighted, press ENTER. The SCALE MODE submenu displays.

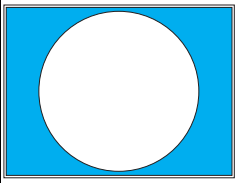
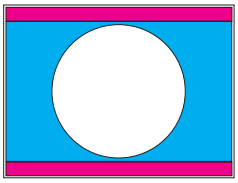
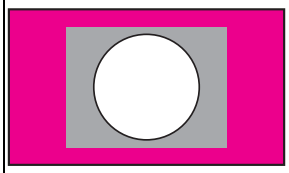
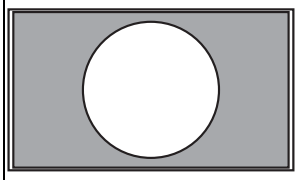


The scale modes are "radio" buttons; you can only choose one at a time.

Note: The SCALE MODE menu icons change to indicate the effect each mode will have on the picture based on the JUSTIFY and SCALE MODE settings, and the source resolution.

Scale Mode	Affect on Input Type on 4 x 3 Display		Affect on Input Type on 16 x 9 Display	
	4 x 3 source (e.g. Standard Video or VGA/SVGA/XGA)	16 x 9 source (e.g. 1080i or WXGA computer source)	4 x 3 source (e.g. Standard Video, VGA/SVGA/XGA)	16 x 9 source (e.g. 1080i or WXGA computer source)
Fill All	No distortion 	Compresses width to fit 	Stretches width of image 	Displays full image without distortion 
Fill All makes the picture fit top-to-bottom and left-to-right, regardless of how this stretches or compresses the picture. Fill All distorts the picture, when the aspect ratio of the incoming picture is not the same as the display.				
Crop	No distortion 	Crops width of image; fits height of image without distortion 	Crops top and bottom of image; fits width of image without distortion 	Displays full image without distortion 
Crop expands non-native aspect ratio pictures until the *second* edges touch the border and lets the other edges of the picture fall outside the display and get cropped.				

Scale Mode	Affect on Input Type on 4 x 3 Display		Affect on Input Type on 16 x 9 Display	
	4 x 3 source (e.g. Standard Video or VGA/SVGA/XGA)	16 x 9 source (e.g. 1080i or WXGA computer source)	4 x 3 source (e.g. Standard Video, VGA/SVGA/XGA)	16 x 9 source (e.g. 1080i or WXGA computer source)
Letterbox /Pillarbox	No distortion 	Fits width of image without distortion; fills height with border 	Fits height of image without distortion; fills width with border 	Displays full image without distortion 
Letterbox/Pillarbox expands the picture until the first edges (top-bottom or left-right) touch the border of the display, and then fills in the other sides with a solid color.				
Wide-screen	Stretches width of image; fills Top and Bottom with border 	Fits width of image without distortion; fills height with border 	Stretches image to fill width without affecting height 	Displays full image without distortion 
Widescreen (16x9) forces the aspect ratio to 16 x 9 (1.77), the standard for many DVD movies. This will distort any picture other than 16 x 9 aspect ratio pictures. Widescreen can be used to display anamorphic DVDs on an array.				
Normal Video	No distortion 	Compresses width to fit, no border 	Fits height and width of image without distortion; fills width with border 	Fits height of image, compresses width and fills with border 
Normal Video (4x3) forces a 4 x 3 (1.33) aspect ratio, the ratio of standard television. Normal Video is used to display standard video on the analog or component inputs. Its resolution is 720 x 640, which is not 4 x 3, but it should be displayed as 4 x 3 (the pixels aren't square).				

Scale Mode	Affect on Input Type on 4 x 3 Display		Affect on Input Type on 16 x 9 Display	
	4 x 3 source (e.g. Standard Video or VGA/SVGA/XGA)	16 x 9 source (e.g. 1080i or WXGA computer source)	4 x 3 source (e.g. Standard Video, VGA/SVGA/XGA)	16 x 9 source (e.g. 1080i or WXGA computer source)
One to One	No distortion  Example above represents an XGA input on an XGA resolution display (1024 x 768)	Fits width of image without distortion; fills height with border  Example above represents a 1080i (1920 x 1080) resolution	Displays image without distortion at actual size with border on all sides  Example above represents a VGA input	Displays full image without distortion  Example above is for 1366 x 768 input on 1366 x 768 native resolution or 1920 x 1080 input on 1920 x 1080 native resolution

One to One maintains the original size and aspect ratio of the picture. This may leave blank areas on all four sides. For instance, a VGA picture (640 x 480) on a 16 x 9 display will occupy only a small area in the center of the screen. For UXGA sources on a 16 x 9 display, this will crop the picture top, bottom, and sides. The primary use of One to One is to display the image without scaling artifacts and with minor cropping.

Note: The One to One Scale Mode will produce different cropping results and the image size will be different for each input resolution.

Justify Settings

Justify determines how the picture will be placed in a wall of displays. For a single display, Justify determines placement on the screen.

Top/Left

Positions the image starting with the top, leftmost display, then across and down. If the image is not large enough to fill all the displays, they are left blank.

Center

Positions the image starting with the center of the image in the center of the wall spreading out equally to all displays. If the image is not large enough to fill all displays, they are left blank.

Bottom/Right

Positions the image starting with the bottom, rightmost display, then across and up. If the image is not large enough to fill all the displays, they are left blank.

Overscan

This is used to hide blank areas and stray lines in the edges of an image. The lower the overscan setting, the more of the optical image that is seen. Standard CRT televisions have an overscan of about 5%. Overscan defaults to 3% for video images.

Wall Width and Wall Height

See "Wall Width and Wall Height" on page 110.

Unit Column and Unit Row

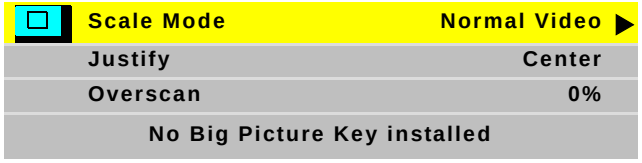
See "Unit Column and Unit Row" on page 110.

Wall Mode

See "Wall Mode" on page 110.

No Option Key

If an Option key is not installed, or if the Option key is not keyed to allow Big Picture, the whole picture will appear on one screen, and the menu looks like this:



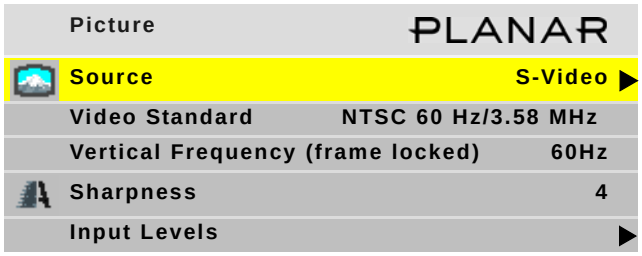
You can't spread one picture over several displays without a processor, but you can make the picture fit each display in the ways described above.

Adjusting Sharpness

After you set the Scale Mode to the one you will use for the program, select the Sharpness level in the PICTURE menu to reduce scaling artifacts. If you are not scaling your image, you may skip this section. (For instructions on how to set Scale Mode, see "Scale Mode Settings" on page 95.)

Sharpness Settings

The Sharpness setting is in the PICTURE menu (press FREQ/PHASE on the remote).



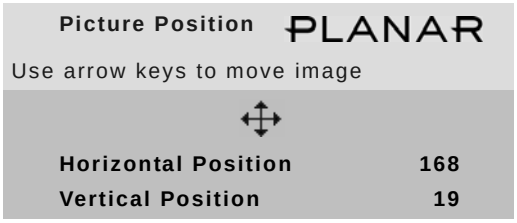
Sharpness settings determine how crisp the image should be. There are sixteen levels of sharpness, where 0 is the softest and 15 is the sharpest. Seven is the default.

Adjusting Position

Position moves the picture on the screen but does not move the menus. This is NOT the same as mechanical engine alignment.

Picture Position

Press the SIZE/POS button once on the remote to open the PICTURE POSITION menu. The four arrow keys move the picture on the screen.



The numbers for Horizontal and Vertical Position refer to the number of pixels from sync to the first displayed pixel. These numbers get smaller as the picture moves up and to the left.

Horizontal Position

This number shows the number of pixels from the beginning of H sync to the first active pixel. Because there are many black pixels after H sync, this number will not be zero when the picture is at the left border of the screen.

Vertical Position

This number is the number of lines from V sync to the first active line, so it will not be zero when the picture is at the top of the screen.

Note: Adjusting the Vertical Position too far may cause the image to jump or hop. If the image appears to flicker or hop, readjust the Vertical Position.

Zoom and Viewport

Zoom fits the edges of a large picture - one that covers many displays' screens - from side to side and top to bottom.

Note: Zoom and Viewport adjustments are mainly used for Planar's cube products with no mullions. Users with direct-view LCD monitors can skip this section.

To access the Zoom menus, press SIZE/POS twice on the remote to open the ZOOM TOP & LEFT menu. Press SIZE/POS a third time to open the ZOOM BOTTOM & RIGHT menu.

You may zoom the sides up to +100 pixels *larger* in each direction. You may also zoom the sides up to –100 pixels *smaller*, but only if that side is not the edge of the overall picture. An example may help make this point more clearly.

This is the original picture from the source.

The picture is cropped and there is some extra picture to the right, off the screens. All the displays can be zoomed out (+) to make the picture larger in each direction.

Unit X cannot be zoomed *in* (–) at the bottom or the left side, because there is no more picture to pull onto the screen.

Unit Y cannot be zoomed in at the bottom, but it *can* be zoomed in from the right (–) because there is more picture out there. Of course, the center display - Column 2, Row 2 - can be zoomed in any direction.

Zoom Menu Entries

Image Resolution

Shows the resolution of the source picture.

This Unit

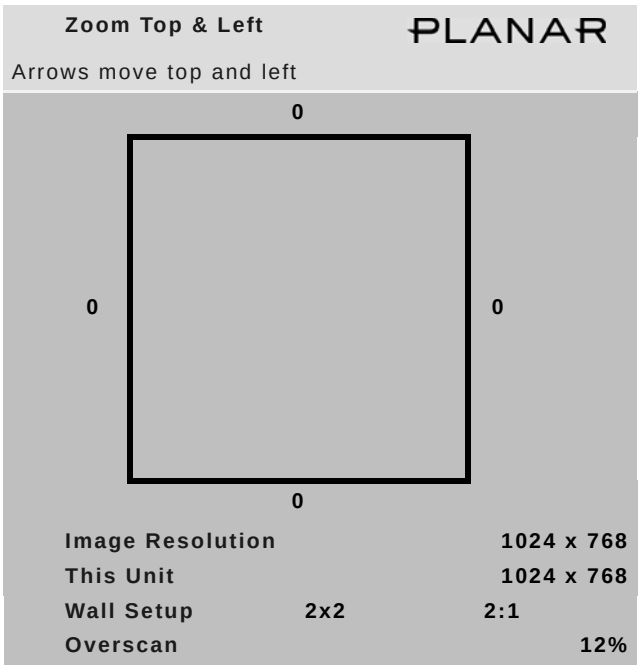
Shows the number of pixels this display is using of all the incoming pixels.

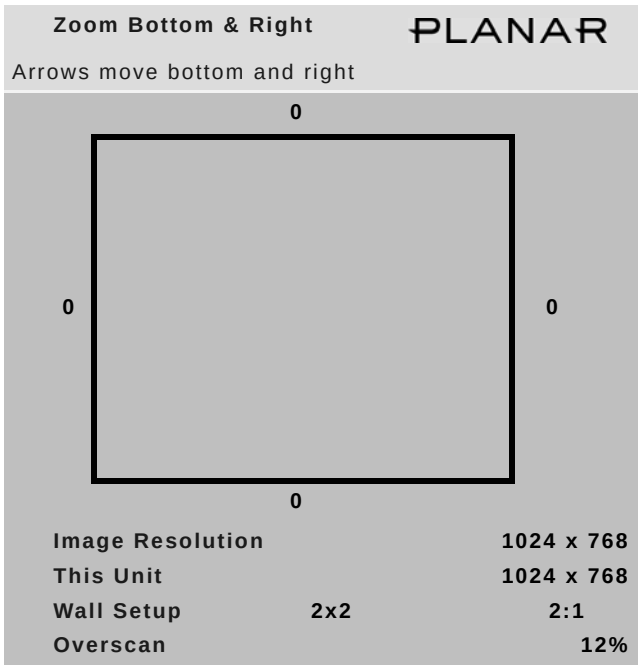
Wall Setup

Specifies the size of the array (from the WALL & ASPECT RATIO menu) and the column and row of this display.

Overscan

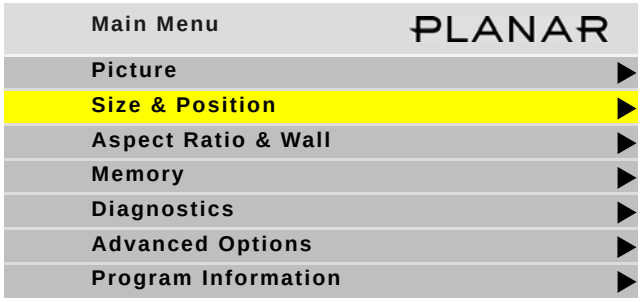
See "Overscan" on page 99.

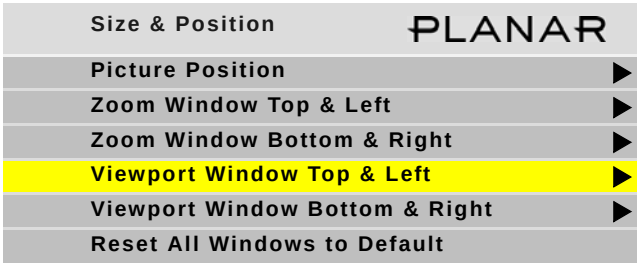




Viewport Adjustment

Use the VIEWPORT menu (MAIN > SIZE & POSITION > VIEWPORT WINDOW) to adjust the number of pixels actually used on the display. You can't increase this number, but you can reduce it.



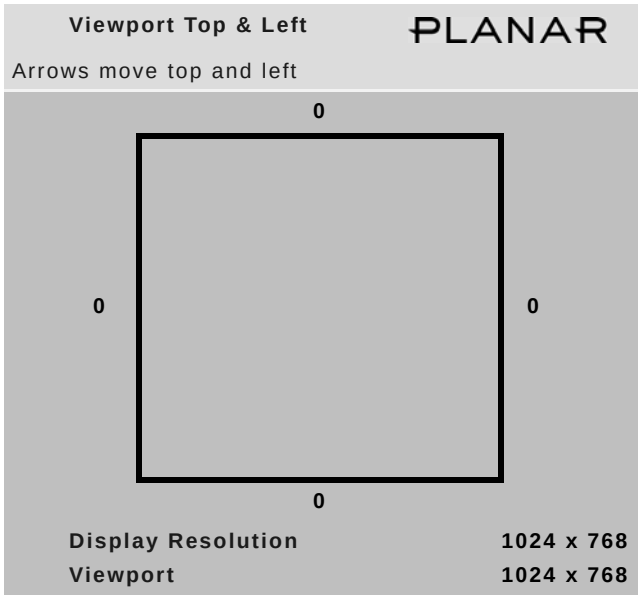


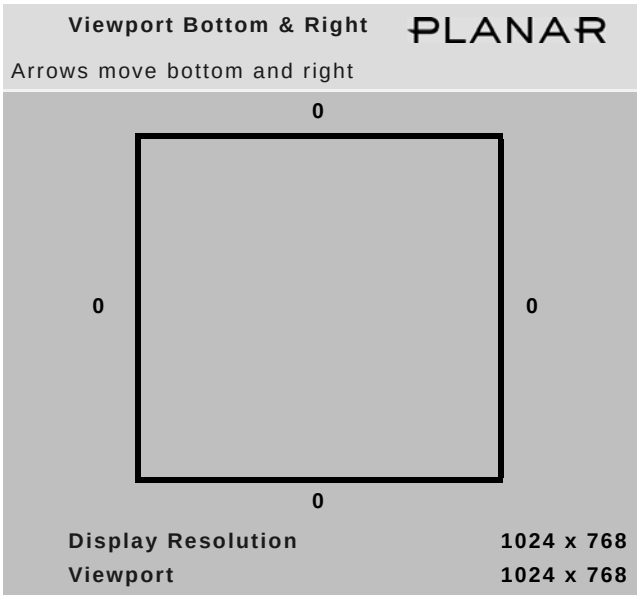
Display Resolution

Shows the resolution of the unit. This has nothing to do with the resolution of the source picture.

Viewport

Shows the number of display pixels being used.





Tiling a Display

If you have a wall of multiple displays, you will need to set up a variety of options that relate to how each display fits into the wall. Whether you use Planar's Big Picture™ or an external video processor, your goal is to make the picture fit together properly at the edges.

If you have *not* checked the optical engine alignment on each c50R/67R, do so now. See "Engine Alignment" on page 73.

Using an External Video Processor

The processor divides a single picture into several sections and sends each part on a separate cable. Connect these cables to the proper display.

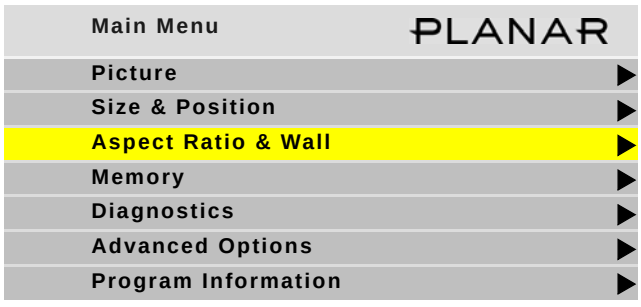
You can still position the picture with the display controls. With most processors, you can position and zoom the picture with the processor controls.

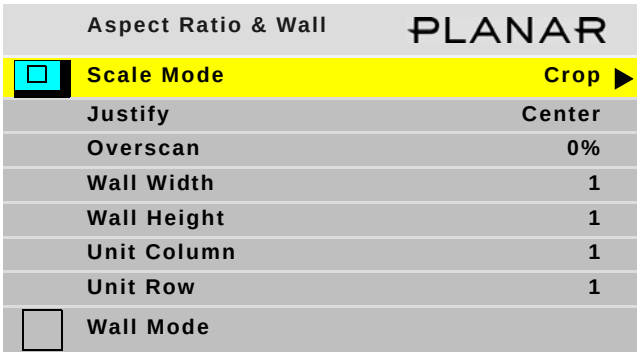
Using Planar's Big Picture™

Each c50/67R must have an Option key installed (See "Installing the Option Key" on page 15).

Loop the same source through all the displays in a wall (see "Loop-Through" on page 44).

To use Planar's Big Picture™, you must set the values in the ASPECT RATIO & WALL menu for the same wall size on all the displays in the array.





Wall Width and Wall Height

These show the number of displays wide and high for the *picture*. This may be different from the physical size of the wall. You could build a 4 x 3 array of displays and use WALL MODE to put a single picture on the four displays in the upper left corner, for instance.

Unit Column and Unit Row

These represent the position of the display in this "array." For example, in the 4 x 3 array of displays shown below, Unit numbering starts at the top left corner of the array. This display would have a Unit Column value of 1 and a Unit Row value of 1.

1:1	2:1	3:1	4:1
1:2	2:2	3:2	4:2
1:3	2:3	3:3	4:3

Wall Mode

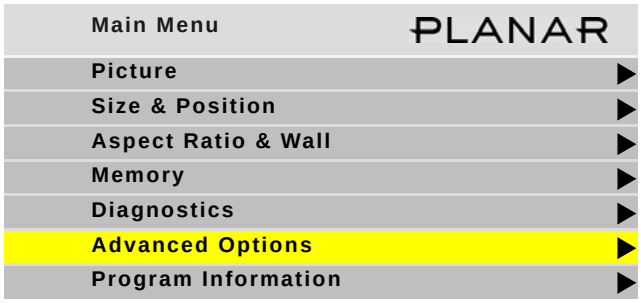
When checked, this turns on the Planar Big Picture™ feature. When not checked, the display shows the whole picture.

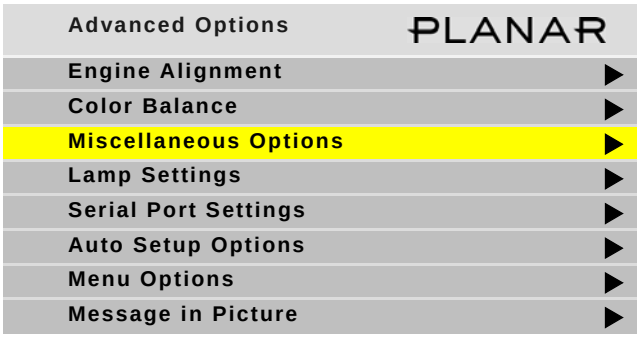
Advanced Options

Some options on the ADVANCED OPTIONS menu (MAIN > ADVANCED OPTIONS) are covered in other sections of this manual:

- Optical Engine Alignment: see "Engine Alignment" on page 73
- Color Balance: see "Adjusting Color Balance" on page 67
- Serial Port Settings: see "Serial Port Settings and Diagnostics" on page 119

The remaining options are covered in this section.

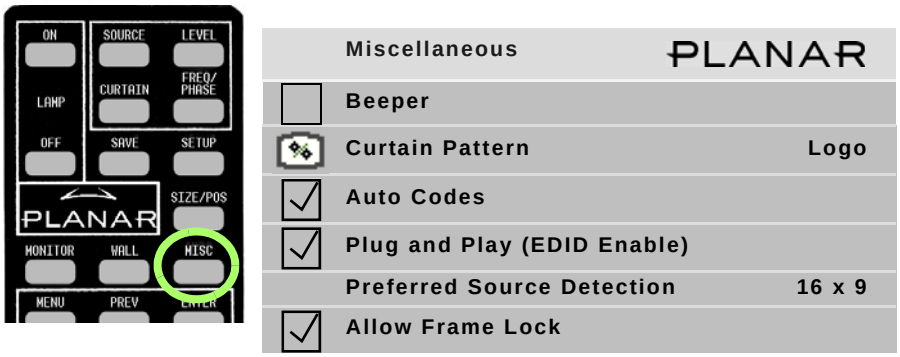




- Miscellaneous Options: see "Miscellaneous Options" on page 112
- Lamp Settings: see "Configuring Lamp Settings Options" on page 113
- Auto Setup Options: see "Auto Setup Options" on page 116
- Menu Options: see "Menu Options" on page 117
- Message in Picture: see "Message in Picture" on page 117

Miscellaneous Options

The MISCELLANEOUS menu contains several unrelated settings. To access the MISCELLANEOUS menu, press MISC twice on the remote.



Beeper

The beeper is an audible signal that indicates a remote command was received by the display. A triple beep indicates that the command cannot be completed. When unchecked, the display only emits a beep on a few commands, such as lamp on or off. Triple beep is always enabled.

Curtain Pattern

The curtain pattern determines what the c50/67R will show when you press the CURTAIN button.

Auto Codes

Auto codes will cause the red and amber on screen codes to flash on the screen if something occurs to cause the lamp to go off, or if the lamp fails. See "On-Screen Codes" on page 133.

Plug and Play (EDID Enable)

Plug and Play allows the source computer's video card to query the display and send the correct resolution. Most video cards work with Planar displays. For the few that don't, you may need to turn off Plug and Play and manually specify the video card settings based on the display's capabilities.

Preferred Source Detection

Analog computer video cards provide only vertical and horizontal frequencies. Sometimes, this is not enough information. In certain cases, a display receiving such "ambiguous" signal modes could misinterpret the resolution to be any of three different modes. For example, 1024 x 768, 1280 x 768, and 1360 x 768 all have the same respective horizontal and vertical frequencies but represent different aspect

ratios, 4 x 3, 15 x 9, and 16 x 9, respectively. By specifying the correct source detection mode, the display can correctly interpret the signal and display the incoming image in the proper aspect ratio. The default preferred source detection is 4 x 3, which is the native aspect ratio of this display. If you are attempting to display a 16 x 9 signal and it is not working, try changing the preferred source detection to 16 x 9.

Allow Frame Lock

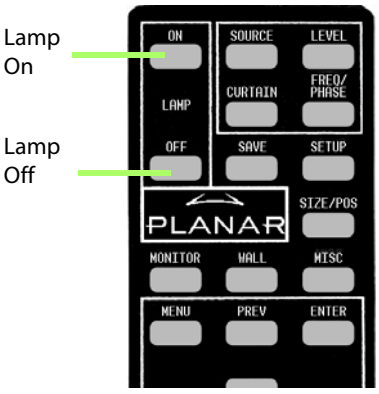
Frame lock causes the display to synchronize its vertical refresh timing with that of the incoming source. This prevents frame tearing or frame dropping. To frame lock, the incoming signal must be within the refresh parameters of the display itself, which is from 49.8 Hz to 60.1 Hz.

Configuring Lamp Settings Options

The LAMP SETTINGS menu determines different aspects of lamp control.

Turning Lamps On and Off

To turn lamps on, press the LAMP ON button. To turn them off, press the LAMP OFF button. What could be simpler?

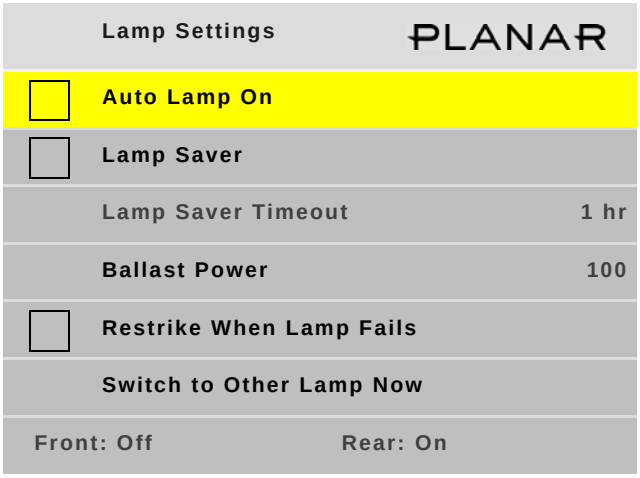


Well, it's not that simple. When the AC power switch is turned on, after having been off, the c50/67Rc makes sure the lamps are cool by running the fans for about 30 seconds. You can't turn on the lamps during this time. When the lamps are turned off, the fans run for one minute to cool them, then the fans shut off. For this reason you should turn off the lamps with the remote control and let them cool before turning off the AC power.

Lamp Settings Menu

To access the LAMP SETTINGS menu, press MISC three times on the remote.

Note: The menu below assumes a dual lamp system. The last three lines do not appear for single lamp systems.



Auto Lamp On

If AUTO LAMP ON is checked, the display turns on the lamps soon after AC power is applied. It won't wait for a remote control or RS232 command.

This is the normal mode for applications where the displays will be on 24 hours a day. This way, no one has to manually turn on the lamps after a power failure.

If the displays normally have the lamps off for part of the day or night, do not check this box. Otherwise, recovering from a power failure at night would turn on the lamps.

Lamp Saver and Lamp Saver Timeout

When checked, LAMP SAVER causes the lamps to go off if the source is absent for the length of time specified in LAMP SAVER TIMEOUT, which can be as little as five minutes. In the menu shown above, if LAMP SAVER was checked and the source picture went away (lost signal) for one hour, the lamps would turn off. They would turn on again as soon as a source picture (signal) returned. Note that a black screen is still a source picture, so if the source picture went black, the lamps would not turn off.

Ballast Power

Select this line to change the wattage for a lamp.

Caution: Be aware that a higher wattage will decrease lamp life.

Restrike When Lamp Fails

If you have a dual lamp system, this item determines what the dual lamp system will do first when the lit lamp unexpectedly fails. A new lamp will not usually fail suddenly, but as a lamp nears end of life, it will sometimes go over voltage and fail. After the lamp has time to cool off, it will usually light again. When this box is checked, the system will attempt to restrike the current lamp and only switch to the other lamp if the current lamp will not light. If this box is not checked, the system will immediately switch to the other lamp and attempt to light it. Keep in mind that there still might be many hours of lamp life left on a "failed" lamp if you do not attempt to restrike the lamp.

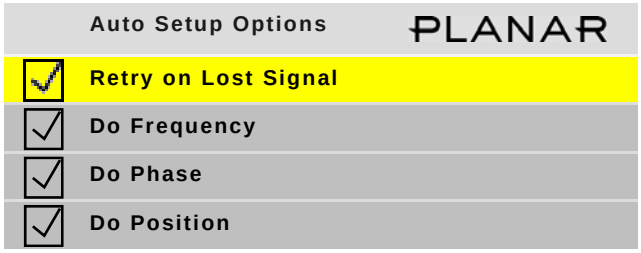
Switch to Other Lamp Now (only in dual lamp systems)

Pressing ENTER on this line switches lamps immediately. This option can be used to verify operation of the lamp that is not currently lit.

Auto Setup Options

Auto Setup Options determines what will happen automatically and what will not.

To access the AUTO SETUP OPTIONS menu, press MISC five times on the remote.



Each of the checkboxes in the AUTO SETUP OPTIONS menu can be turned on or off by selecting it (using the up/down arrows) and pressing ENTER.

Retry on Lost Signal

Occurs only when the present signal (picture) disappears or changes in some way. If this item is not checked, the display will not try to sync to a new signal. Keep this menu item checked.

Note: Searching will *not* happen just because the picture goes black. Black, from video or from a computer, is a valid picture. The signal itself (the sync pulses) must be lost to trigger a search.

"Do" Checkboxes

Each DO that is checked ☑ will adjust the display, one process at a time, until all the processes are completed.

In the following situations, each of the checked DO boxes will be done in the order shown in the menu:

- If a new signal is acquired, either through selecting a different connector or because the source picture has changed modes, such as from WXGA to UXGA.
- When you press the SETUP button on the remote.

Do Frequency and Do Phase

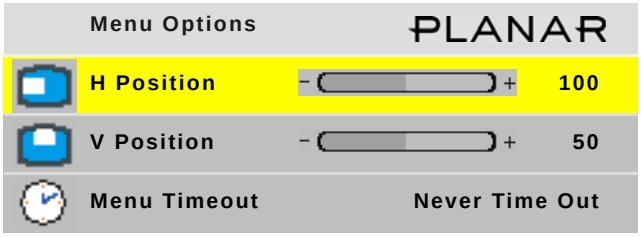
Work separately to find the frequency and phase of the computer picture and adjust to them. These work best on a picture that has a lot of sharp changes in brightness, such as text (adjacent white and black pixels).

Do Position

Centers the picture on the screen.

Menu Options

Menu Options determine the position and time duration of the menus on the screen. To access the MENU OPTIONS menu, press MENU on the remote and from the MAIN MENU, select ADVANCED OPTIONS > MENU OPTIONS.



H Position

Moves the menus (all of them) left and right on the screen. Use the -/+ arrows on the remote to increase or decrease the distance from the left side of the screen to the left side of the menu. The number indicates in percent, how far across the screen the menu starts.

V Position

Moves the menus up and down. Use the -/+ arrows on the remote to move the menu. The number indicates in percent, how far the menu is down the screen. It is not possible to move the menu to the bottom of the screen.

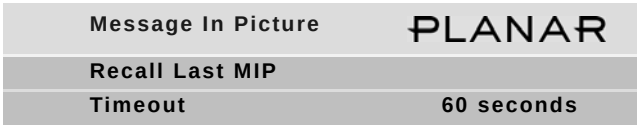
Menu Timeout

Determines how many seconds the menu will stay on the screen without any activity. NEVER TIME OUT means the menus will not automatically disappear. The maximum timeout is 60 seconds. The shortest possible timeout is 5 seconds. If you have never changed MENU TIMEOUT, the default value is NEVER TIME OUT.

Message in Picture

Message in Picture enables text messages to be displayed on a single display or an array. To access the MESSAGE IN PICTURE menu, press MENU on the remote and from the MAIN MENU, select ADVANCED OPTIONS > MESSAGE IN PICTURE.

Note: The MESSAGE IN PICTURE menu is only available if the computer connected by RS232 has enabled the Message in Picture feature.



Recall Last MIP

Redisplays the last Message in Picture that was displayed.

Timeout

Determines how long this message will be displayed; the range is 0-120 seconds; 0 seconds means it will not time out.

To generate and administer text messages, you must download the MIP Maker software application from Planar's website. We suggest you also download the user guide. For more information, see "Accessing Planar's Technical Support Website" on page 141.

Serial Port Settings and Diagnostics

If you want to control the displays remotely with RS232 commands from a computer, or if you will use the Auto Color Balance (ACB) feature, read this section. Otherwise, skip it.

Multiple displays can be linked together for RS232 control using a straight-through Ethernet cable. This is the common type of LAN connection cable sometimes called a Cat-5 cable. For more information, see "RS232 Communication" on page 55.

RS232 is also used to upgrade the firmware of the display.

Serial Port Settings

To access the SERIAL PORT SETTINGS menu, press MISC four times on the remote.

Serial Port Settings	PLANAR
Group ID	1
Unit ID	1
ASCII Response Type	Symbolic
ASCII Response Terminator	CR
Baud Rate	19200
☐ Terminate RS485	

Group ID and Unit ID

Each display in the loop must have a unique ID.

The RS232 ID has two parts, Group ID and Unit ID. Each part has a range of 0–9, A–Z. This range results in 1300 possible addresses.

You can group the displays by using the same letter or number of the Group ID, such as A. In this way you can address the group as A*, and all the displays in the string that have Group ID A and any Unit ID will execute the command.

Note: It does not matter what order you use to set IDs for the displays. It is common practice to use Unit IDs that are in order, left to right and top to bottom, but this is not mandatory. The only rule is: DO NOT USE THE SAME ID FOR DIFFERENT DISPLAYS.

Part of the RS232 command will be an address. This address may take several forms. For example, suppose you have eight displays in one area divided into two groups. You might set the IDs of the displays like this:

Group ID	Unit ID
A	1
A	2
A	3
A	4
B	1
B	2
B	3
B	4

With this scheme, you have four ways to address these displays:

Address	Affect on Displays
A3 B4 etc.	Only the specific display addressed will obey the command. Also, the display will respond to the host computer.
**	All displays in this serial loop will obey the command.
*4	Both the displays whose IDs end in "4" will obey this command.
B*	All four displays in Group B will obey the command.

ASCII Response Type

Determines what type of data will be returned to the computer. For human-readable text in a serial program, choose SYMBOLIC. For computer-read data, use NUMERIC or DATA ONLY.

ASCII Response Terminator

Will be determined by what your serial program wants to see at the end of every transmission from the display.

Baud Rate

Must be the same as that used by the controlling computer. The baud rate is *not* automatically set, as it is with modem communications. It must be manually set here **and** at the computer to match each other.

Note: For firmware upgrades, you don't need to adjust the baud rate.

Terminate RS485

Select this checkbox if you have a long chain of displays and are having trouble communicating. Be sure you only select this checkbox for the **last** display in the chain.

Serial Port Status

To view RS232 port status, press MONITOR twice on the remote. To view RS485 port status, press MONITOR a third time. To view RS232 AUX port status, press the MONITOR a fourth time.

Serial Port Status RS232 ▶ PLANAR

<ENTER> to clear; +/- to select different serial port

Commands Received	34
Replies Sent	34
Last Packet Type	Operation
Last Packet Address	Not Addressed
Bytes Received	921
Bytes Sent	773
UART Framing Errors	4
UART Overflow Errors	0

Group 0 Unit: 0 19200 Baud

Most Recent

...115, 111, 108, 117, 105, 111, 110, 63, 13

.st--1?.st--2?.st--3?.lcd.vertical-resolution?.

The SERIAL PORT STATUS menu provides diagnostic information for the serial port.

Controlling With RS232 Commands

The RS232 protocol - the "rules" for controlling displays with RS232 commands - are described in a separate document. See "Accessing Planar's Technical Support Website" on page 141 to see how to get to the web page. Then look for c50/67R and under that the *RS232 Guide*.

Saving and Recalling Configurations

Some settings are saved automatically, but there are big advantages to saving a configuration manually. You can use the 40 numbered memory “slots” to save and recall settings, which is the fastest way to change configurations.

Some display settings (such as position, brightness/contrast, and color balance) are saved automatically five seconds after you make a change. The display caches the last ten settings. Whenever a picture is shown from a new source with the same resolution as a previous picture, the display recalls the previous settings rather than readjusting everything. This happens regardless of the check marks in the AUTO SETUP OPTIONS menu. (See "Auto Setup Options" on page 116.)

For example, suppose you display an NTSC picture in the composite input and set the Brightness to your liking. Then you feed in a composite PAL picture and set a different Brightness. If you then send a new NTSC picture, the previous NTSC picture’s settings for Brightness are used.

Note: Aspect Ratio is specific to the source, which means it applies to all modes. It does not change when the system recalls a memory from cache.

How Automatic Save Works

Whenever you change settings on the display with the remote control or RS232 commands, they are saved automatically. If you change to a new source (switch to another input connector) then switch back to the previous source, everything you did before will be “recalled.” Things will look like they did before.

Suppose you make adjustments to an SVGA source on analog, then you feed a UXGA source to analog and make new adjustments. Then you switch to the S-Video connector and do some more setup for it. Later, you switch to the analog input again, and this time it has the SVGA source from before. The display will recognize that it has seen this source before, or at least a source with these characteristics, and will recall the SVGA settings you established before.

The settings recalled by Automatic Save include Input Levels, Position and Frequency. However, Wall Mode and Big Picture adjustments are not saved with Automatic Save. Those settings can only be recalled from memory slots.

The fastest, most efficient way to change from one source to another, or to change a wall from individual pictures to one big picture, is to recall a memory. All of this is saved even with AC turned off.

Advantages of Saving Configurations to Memory Slots

- You can compare multiple settings quickly
- You don’t have to repeat settings when comparing entire configurations
- You can revert to a known good setting when testing new configurations

What the Memories Store

The following settings can be stored in a memory slot and recalled when needed:

- Selected source
- Resolution (and much more about the signal)
- Frequency
- Phase
- Sharpness
- Position and size (zoom settings)
- Everything in the WALL & ASPECT RATIO menu
- Brightness, Contrast, Hue and Saturation for video sources

All of this is stored separately for each memory slot. As an example, you could store multiple different wall setups and switch between them quickly.

Global Storage

The following settings are stored globally; that is, they are stored at the display level and are the same for all memory slots.

- Everything in the MISCELLANEOUS menu
- Everything in AUTO SETUP OPTIONS
- Everything in MENU OPTIONS
- All the HOURS settings
- All the COLOR BALANCE settings

Memory: What Is Saved? And Where?

In the display, some parameters (values) are associated with the mode. The mode is primarily the horizontal and vertical resolution and the vertical frequency of the incoming source picture. It is more than that, but if you think of it this way, you will be close enough. Some parameters are associated with the input. The input in this instance means the input connector: Analog 1, Analog 2, digital, composite video, etc. The parameters specific to mode and input are saved in memory slots.

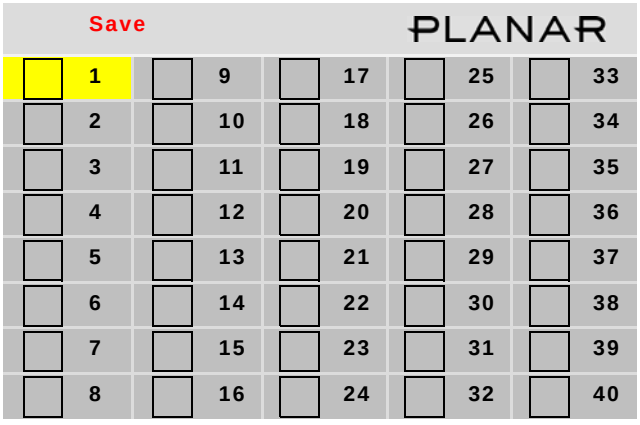
Some parameters are global. They are independent of the mode or input, and are not saved to memory slots, as shown in the table below.

Parameter	Specific to the		Global	Parameter	Specific to the		Global
	Mode	Input			Mode	Input	
ASCII Response Term.			x	Position, Horizontal	x		
ASCII Response Type			x	Position, Vertical	x		
Auto Codes			x	Resolution, Horizontal	x		
Auto Lamp On			x	Resolution, Vertical	x		
Baud Rate			x	Retry On Lost Signal			x
Beeper			x	Saturation	x		
Black Level: R, G, & B	x			Sharpness		x	
Brightness (video)	x			Terminate RS-485			x
Color Balance (all values)			x	Unit ID			x
Contrast (video)	x			Viewport Window Bottom		x	
Curtain Pattern			x	Viewport Window Left		x	
Do Frequency			x	Viewport Window Right		x	
Do Phase			x	Viewport Window Top		x	
Do Position			x	Wall Height		x	
Frequency	x			Wall Mode		x	
Gamma			x	Wall Unit Column		x	
Group ID			x	Wall Unit Row		x	
Hue	x			Wall Width		x	
Justify		x		White Boost			x
Menu H Position			x	White Level: R, G, & B	x		
Menu Timeout			x	Zoom Window Bottom		x	
Menu V Position			x	Zoom Window Left		x	
Overscan		x		Zoom Window Right		x	
Phase	x			Zoom Window Top		x	
Plug and Play (EDID)			x				

Saving Configurations

1 Set up the display the way you want it.

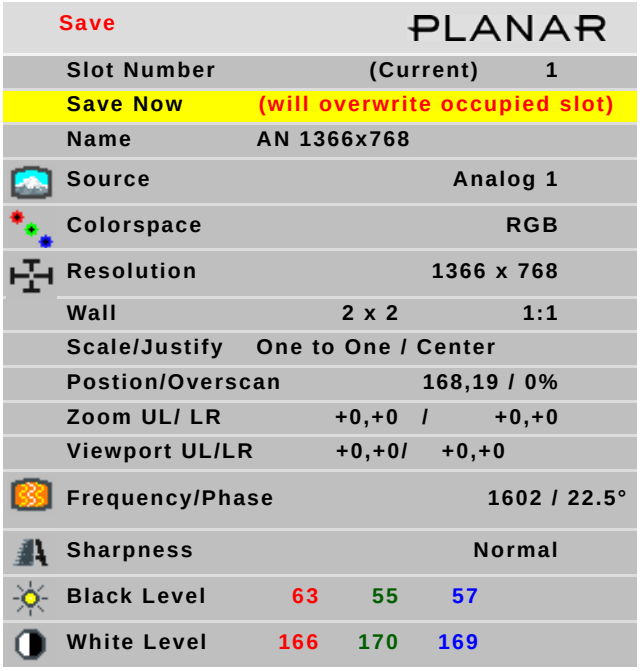
2 Press the SAVE button twice.



The SAVE grid menu displays. This menu contains 40 numbered memory slots.

3 Using the arrow keys on the remote, navigate to a slot:
- An unchecked slot number allows you to save new settings.
- A checked slot has settings already saved to it. If you want, you can overwrite what's already saved.

4 Press ENTER. The SAVE SLOT menu displays.



Note: This menu shows all the settings that will be saved. You can't change anything but the name in this menu. The appearance of this menu is somewhat different for digital and video sources, reflecting what is saved for them.

a If the current settings exactly match what is already in the memory, (CURRENT) will appear in the SLOT NUMBER line.

b If the memory already had data, and the only change is to the name, the phrase "will update name of occupied slot" appears in the SAVE NOW line.

c If this memory already has something stored in it, the phrase "will overwrite occupied slot" appears in red on the SAVE NOW line. This is the only warning.

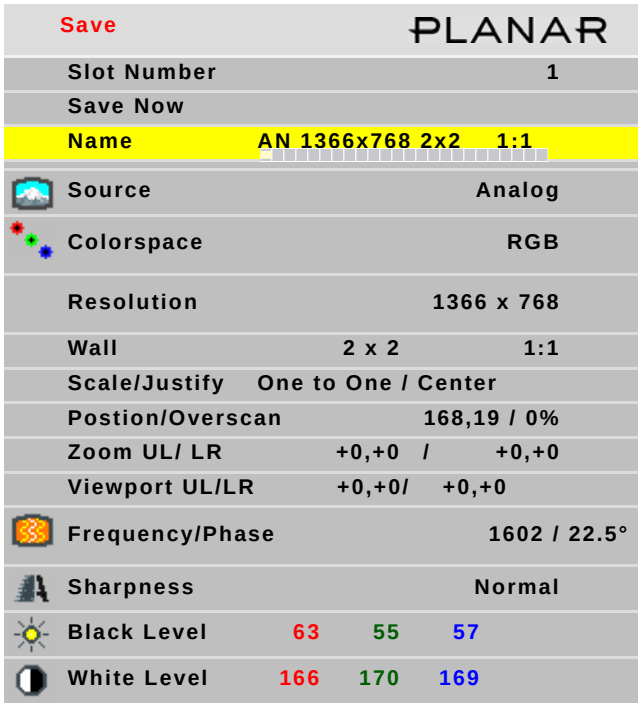
d If none of these messages appear, this slot is empty.

5 Select SAVE NOW and press ENTER. The display instantly stores all the current settings into that memory slot.

Changing the Name of the Memory Slot

The default name is an abbreviation of the source connector, resolution, and if Wall Mode is on, wall settings. In the following example, the name tells you that the source is connected to Analog 1, which displays 1366 x 768, is part of a 2 x 2 array, and is the display in the upper left corner (column 1, row 1).

1 If you want a more descriptive name, select NAME and press ENTER. A little bar appears beneath the name.



   a. Use the -/+ keys to move the yellow selector under the character you want to change.
   b. Use the up/down arrows to change the character.

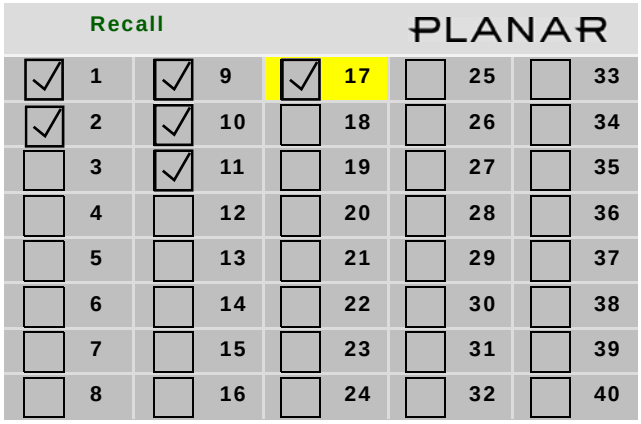
2. When you are finished, press PREV.

3. Select SAVE NOW and press ENTER.

Note: If you use RS232 controls, you can also use commands to send a string name to a memory slot, saving time.

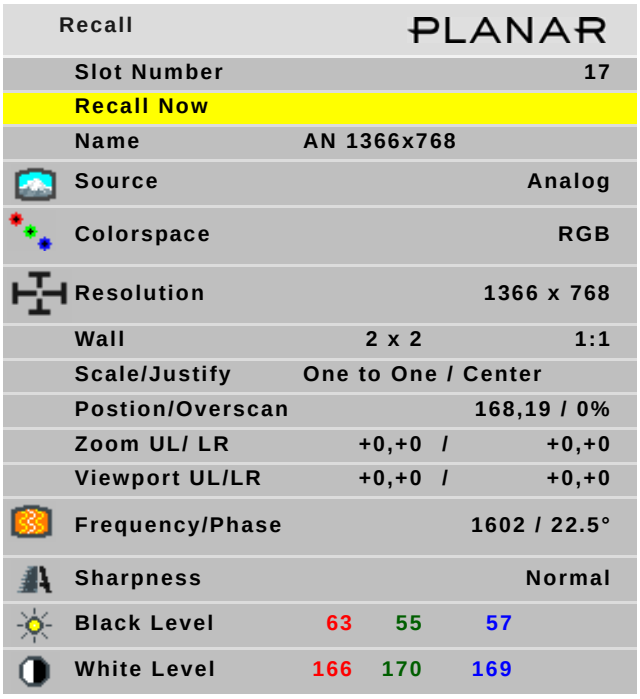
Recalling Stored Configurations

1 Press SAVE once to open the RECALL grid menu.



2 Navigate to the slot you want to recall. When navigating, you can only go to the checked numbers. All the slots with checks have something stored in them. The others are grayed out.

3 Press ENTER to open the RECALL SLOT menu.



Note: If this slot number has exactly the same settings that are currently being used, a (CURRENT) message appears on the top line.

The name of the memory is listed here, as well as all the important parameters (data) stored in that memory slot.

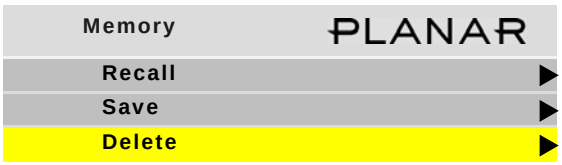
4 If the name is *not* the one you want, press PREV and choose another memory.

5 In the RECALL SLOT menu, RECALL NOW is selected. Press ENTER to recall the parameters currently displayed in the menu.

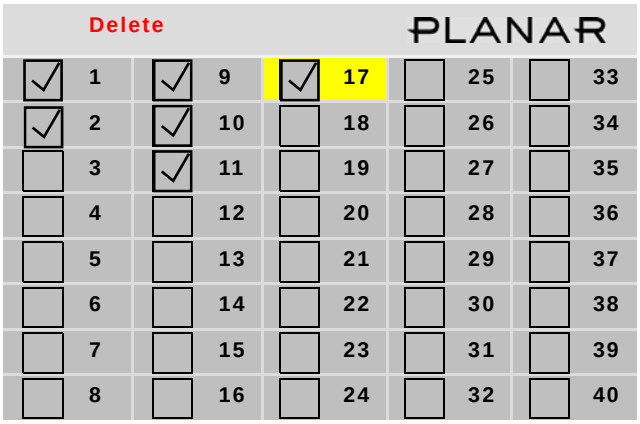
6 We suggest that you create a list of memory slots that contains each slot number, name and description.

Deleting a Configuration

1 Go to the MEMORY menu (MAIN > MEMORY).

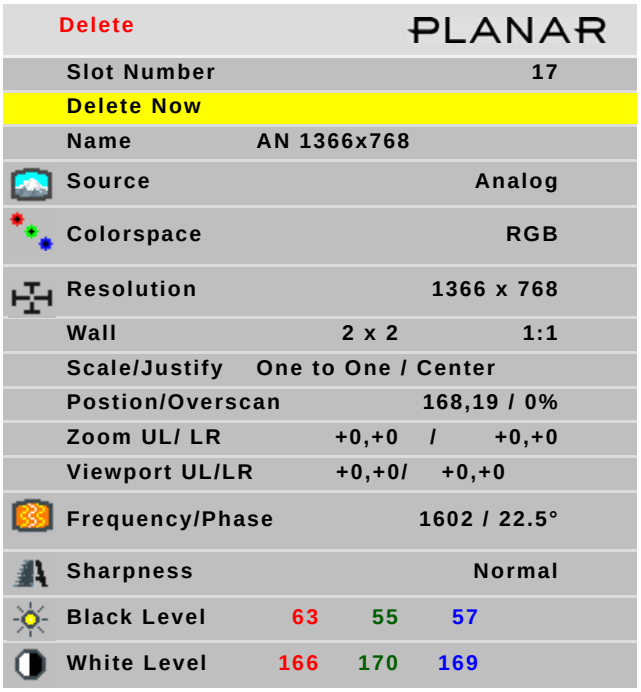


2 Select DELETE and press ENTER.
This opens the DELETE grid menu with 40 numbered memory slots.

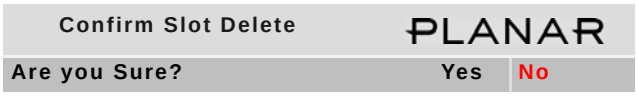


3 Navigate with the arrow keys to the slot you want to delete and press ENTER. When navigating, you can only go to the checked numbers. All the slots with checks have something stored in them. The others are grayed out.

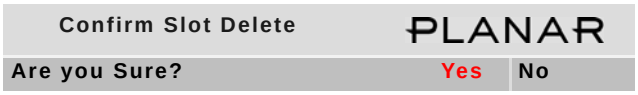
4 In the DELETE SLOT menu, DELETE NOW is selected.



5 Press ENTER.



6 Use the left arrow to make the YES red and press ENTER.



Note: It is not necessary to delete the data in a memory slot before saving new data. Saving will overwrite the stored data. See "Saving Configurations" on page 126.

Simple Troubleshooting

On-Screen Codes

On-Screen Codes are a convenient troubleshooting tool. To see them, press MONITOR on the remote. If the lamp is off, you will see red and amber lights blinking on the screen. If the lamp is on, it may be difficult to see the code looking straight at the screen. Move to the side; this sometimes helps.

Condition	Priority	Each block represents 0.2 seconds
Fan failed	1	R · Amber
Lamp switcher failed	2	R · Amber · R
HV power supply fan failed	3	R · R · Amber
Optical Engine Failed	4	R · R · Amber · R
Lamp failed[1]	5	R · R
Wait On	6	R · R · Amber · Amber
Wait (lamp cooling)	7	R · R · R · R
One lamp failed[2]	8	Amber · R · Amber
Lamp off (Auto Off)	9	Amber · Amber · R
Lamp off (Ready)[3]	10	Amber · Amber
Lamp Striking (starting)	11	Amber · Amber · Amber
Lamp on and all OK	12	Amber on continuously

R = Red To show the code, on the remote, press MONITOR once

1 If system is dual lamp, both lamps failed.

2 One lamp failed, or partial lamp switcher failure.

3 The lamp is off because of lamp timeout, or because the lamp switcher is moving.

The code can come on automatically when there is a failure. To turn on automatic codes, use the remote: MAIN MENU > ADVANCED OPTIONS > MISCELLANEOUS OPTIONS and check the AUTO CODES box.

Reading the LEDs on the Control Board

The LEDs on the control board can tell you a lot about the state of the display.

Table 1: Meaning of the LEDs on the c50/67R Control Board

LED Name	Off	Green	Amber	Red
Ready	The lamp is on	Ready for a Lamp On command.	Cooldown period; cannot strike lamp now.	Fault condition.
Source		The selected source is detected and displayed.	The selected source is going through automatic adjustments.	The selected source is not detected.
Lamp F	The lamp is off	The lamp is on.	Lamp was requested to turn. on, but still striking.	The lamp failed to strike.
Lamp R	The lamp is off	The lamp is on.	Lamp was requested to turn on, but still striking.	The lamp failed to strike.
Remote IR	No IR detected	IR signal has been received, although it is not necessarily valid. Will flicker in presence of any IR energy.		
Serial Data		Bytes received on any serial channel.		
Serial Command		Detected serial data packet addressed to this cube.		
Lamp Saver	Lamp Saver not active	Active; a valid source present now.	Active, and there is a valid source present now, but lamp is cooling. Lamp will turn on when cooling is finished.	Active; no valid source. When source is detected, lamp will turn on.
Engine Status		Optical Engine is OK.		Optical Engine fault was detected.
Ballast Status	Lamp is off	Communication with ballast is OK.	Ballast has returned an error.	Can't communicate with ballast.
Ballast Supply		High voltage supply is on.		
SIB connected	[SIB = System Interface Board]	SIB is properly connected to the control board.	SIB is properly connected to the control board but not to the engine.	SIB is not properly connected to the control board.
Intake Fan	Not running	Running		Failed
Lamp Fan	Not running	Running		Failed
Engine Fan	Not running	Running		Failed
PS Fan	Not running	Running		Failed

Changing a Lamp

1 Using the remote, turn off the lamp and allow the cooling fans to stop (about one minute) before proceeding.

WARNING! Never remove a lamp that is still lit.

Caution: In the dual-lamp system, it is possible to remove and replace the lamp that is not being used while the other lamp is on. Be careful. Use UV protective eye wear. Also, be aware that lamps are very hot and can stay hot for some time after they are turned off.

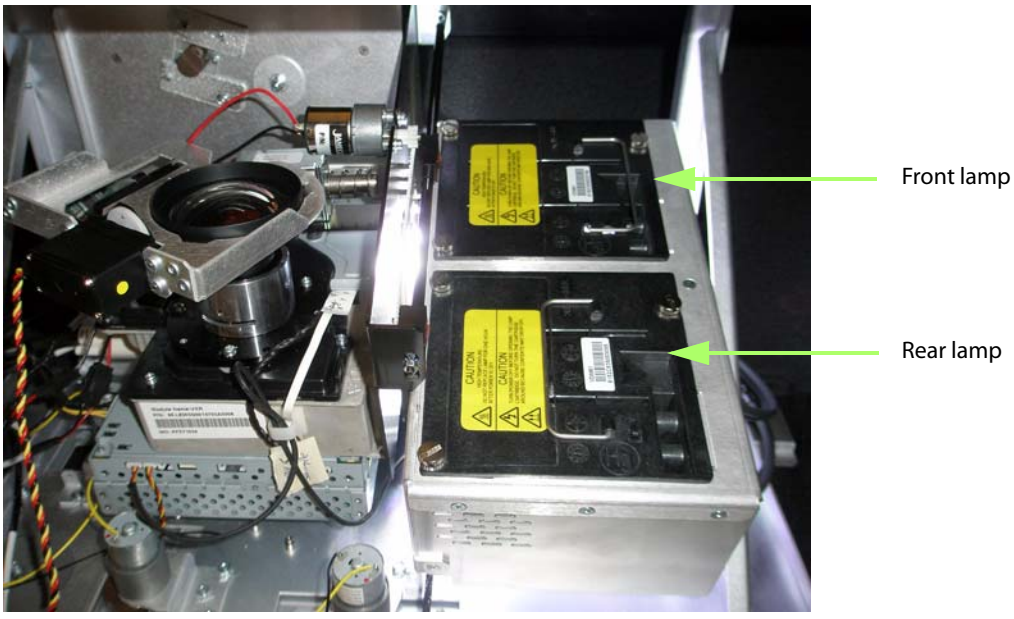
2 Do one of the following:
- For front access units, open the screen.
- For rear access units, remove the rear panel.

3 Turn off the power switch and remove the power cord. (For front access units, reach through the opening next to the control board.)

4 Lift the light shield.

5 If you have a dual lamp system and want to change the front lamp, remove the three thumb screws and bracket above the lamps.

6 Loosen the three captive thumb screws on top of the lamp. The picture shows two lamps in the dual-lamp system. Your system may only have one.



7 Lift the wire handle and pull the lamp straight up and out.

8 The picture (page 135) shows a dual lamp system viewed from the back. In this picture the front lamp is in the correct position for use, so you would probably want to replace the rear lamp in this case.

9 Remove the new lamp from its packaging and plug it into this space. Push it all the way down. Tighten the three screws finger tight.

Note: If the lamp is not pushed all the way down, the light path will not be correct. This may cause a poor picture.

10 Close the light shield.

11 Reinstall the power cord and turn the unit on.

12 Do one of the following:
- For front access units, close the screen.
- For rear access units, replace the rear panel.

13 Reset the lamp hours (MAIN MENU > DIAGNOSTICS > HOURS).

14 Color Balance the wall (see "Adjusting Color Balance" on page 67).

Changing an Air Filter (Rear Access)

The air filter is in the back of the unit below the power cord.

1. Using the remote, turn off the lamp and allow the cooling fans to stop (about one minute) before proceeding.
2. Power down the unit and remove the power cord.
3. If necessary, lift up the cables so they are not in the way of the air filter.
4. Pull straight up on the air filter to remove it.

5. Insert the new air filter. Arrows on the air filter should indicate air flow direction, which is into the unit.
6. Plug in the power cord and turn on the power.

Changing an Air Filter (Front Access)

The air filter is in the back of the unit below the power cord.

1. Using the remote, turn off the lamp and allow the cooling fans to stop (about one minute) before proceeding.
2. Remove the front screen.
3. Loosen the captive screws at the top and bottom of the control board.
4. If necessary, lift up and remove the control board from its pin hinges.
5. Reach through to the front of the unit to power down the unit and remove the power cord.
6. If necessary, lift up the cables so they are not in the way of the air filter.
7. Reach through to the front of the unit and pull straight up on the air filter to remove it. From the front, it might be hard to see.
8. Insert the new air filter. Arrows on the air filter should indicate air flow direction, which is into the unit.
9. Plug in the power cord and turn on the power.
10. Reposition the control board on its pin hinges.
11. Tighten the captive screws at the top and bottom of the control board.
12. Reinstall the front screen.

Where to Go From Here

If none of the suggestions offered thus far have solved your problem, contact Planar's Technical Support Department.

via mail:	Planar Systems, Inc. Control Room and Digital Signage 1195 NW Compton Drive Beaverton, OR 97006
via e-mail:	planarsupport@planar.com
via phone:	+1-503-748-5799
via toll-free phone:	+1-866-PLANAR1 (752-6271)
via fax:	+1-503-748-5532

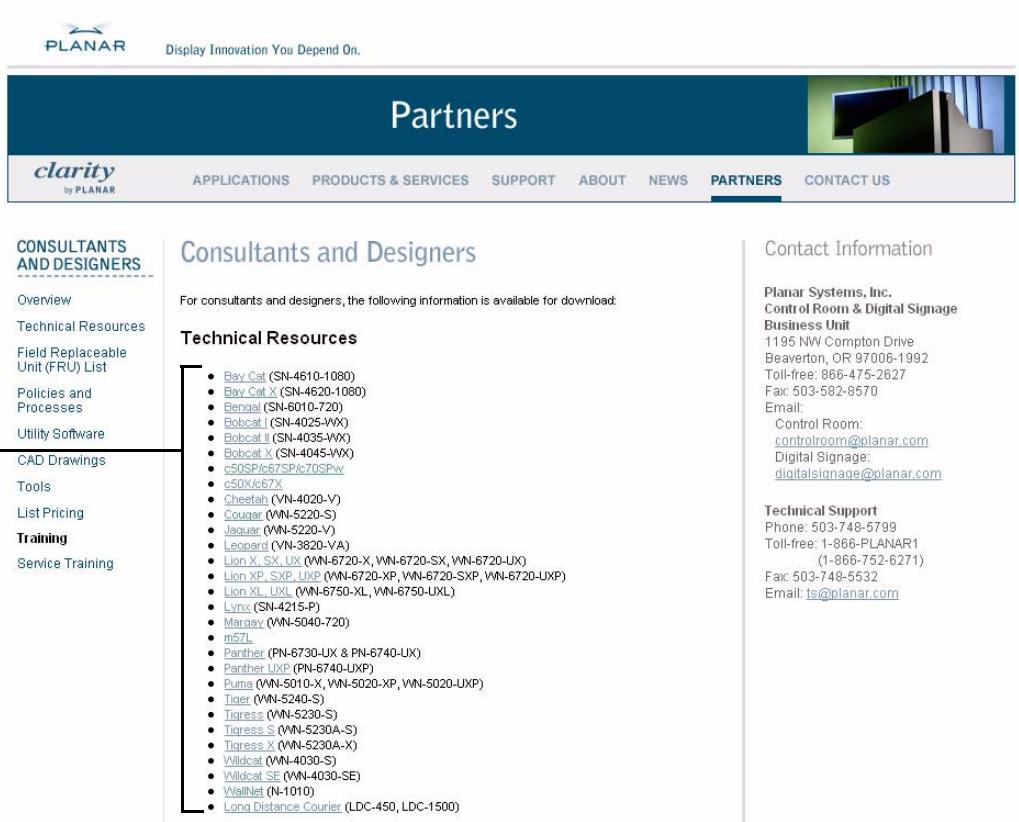
Accessing Planar's Technical Support Website

1. Go to www.planarsignage.com/partners
   Under "Partner login", click on CONSULTANTS AND DESIGNERS
   User name: tech
   Password: help

2. From there, you can access downloadable utility software, new firmware, user manuals, and service manuals.

3. To access information for a specific model, click on that model name. For example, to download an electronic copy of this manual, click on c50RP/c67RP, c50RX/c67RX.

To access user guides, service manuals, firmware, and other resources for a particular



Downloading Additional Documentation and Firmware

Some of the other documents for the c50/67R, which are or will be available from the Technical Support Department website, are listed below:

Document Name	Contents
Installation & Configuration Guide	Information for installers and technicians to install and configure displays.
Troubleshooting, Maintenance, and Service Manual	Troubleshooting steps that provide a logical front-end to service and maintenance instructions.
RS232 Reference Manual	Technical information about the product, such as display mode information and how to use RS232 commands to control displays.

Downloading Utility Software

1. Read the instructions listed under "Accessing Planar's Technical Support Website" on page 141.
2. Click Utility Software.
3. From the list of available software, click on the tool you need.
   For example, to control the c50/67R using RS232 commands, download Serial Talk. You may also want to download "Using Serial Talk," which is a document that explains how to use Serial Talk.

Specifications

Mechanical Specifications

Specification	c50RP/c50RX		c67RP/c67RX		Notes
Outside dimensions	in/lbs	mm/kg	in/lbs	mm/kg	
Width	40″	1016mm	54″	1372mm	
Height	38″	965mm	49″	1245mm	
Depth RP RX	 27″ 25″	 686mm 635mm	 34″ 32″	 864mm 813mm	
Weight (chassis only)	85lbs	39kg	124lbs	56kg	
Shipping weight	138lbs	63kg	187lbs	85kg	
Orientation	vertical only, no tilt allowed				
Chassis color					Black
Rear clearance required	none				
Screen dimensions					
Diagonal	50″	1270mm	67″	1702mm	
Width	40″	1016mm	54″	1372mm	
Height	30″	762mm	40″	1016mm	
Weight	27lbs	12kg	46lbs	21kg	
Aspect ratio	4:3		4:3		

Electrical and Heat Specifications

Specification	Maximum	Minimum	Typical	Notes
Video input amplitude				
Separate RGB analog	1.0V p-p	0.5V p-p	0.7V p-p	75 ohm termination
Composite analog	5.0V p-p		0.3V p-p	75 ohm termination
TTL H and V sync	5.0V	2.5V	3.5V	TTL at 330 ohm termination
Input/Output				Connector
Analog 1 (In/Out)				VGA 15-pin HD D-Sub female connector (x2)
Analog 2 (In/Out)				VGA 15-pin HD D-Sub female connector (x2)
Digital (In/Out)				DVI-D female connector (x2)
RS232 Control (In)				RJ45 female connector
RS485 Control (In/Out)				RJ45 female connector (x2)
Optional VIM Input/Output				Connector
Composite Video (In/Out)				RCA phono jack, female, yellow (x2)
S-Video (In/Out)				4-pin mini circular DIN, female (x2)
Component YPbPr (In/Out)				RCA phono jacks, female, red/green/blue (x2)
HD/SD SDI (In/Out)				BNC, female (x2)
AC requirements				
Line voltage				
115V range	120V	100V		50-60 Hz auto-ranging, power factor corrected
230V range	240V	200V		
Power				
115V			170W	
230V			180W	
Current				
115V			1.4A	
230V			0.8A	
Heat, BTUs per hour				
115V			580	
230V			614	

Optical Specifications

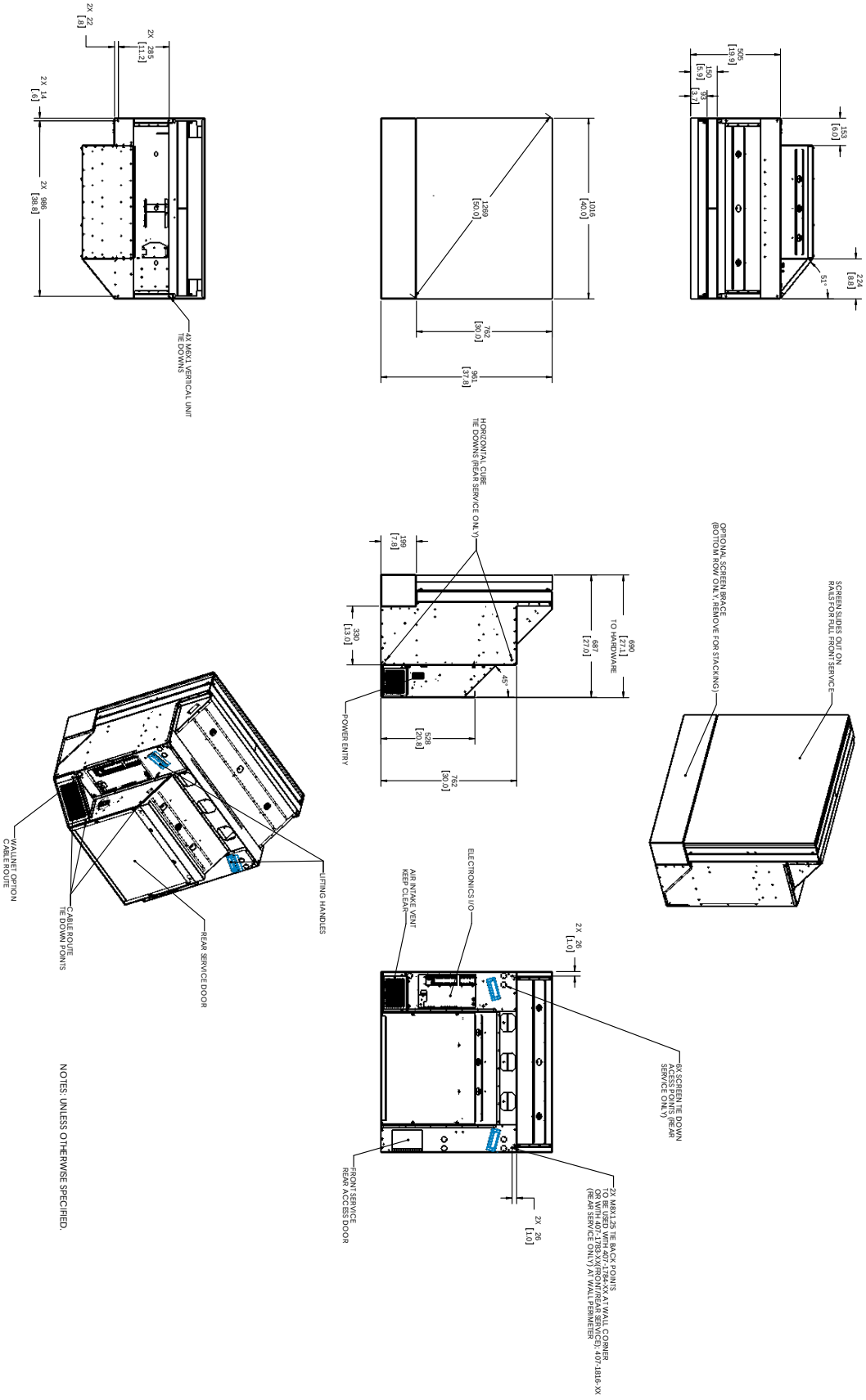
Specification	Maximum	Minimum	Typical	Notes
Screen brightness 100W				
c50RP			630 cd/m	high gain (white boost off)
c50RX			481 cd/m	
c67RP			355 cd/m	
c67RX			271 cd/m	
Screen brightness 120W				
c50RP			756 cd/m	high gain (white boost off)
c50RX			578 cd/m	
c67RP			425 cd/m	
c67RX			325 cd/m	
Contrast ratio				
c50RP/c50RX		1000:1	1500:1	
c67RP/c67RX		1000:1	1500:1	
Viewing Angle, horizontal & vertical			±70°	at 1/5 gain
Color Gamut			70% NTSC 100% EBU	
Number of Colors			16M	
Resolution				
c50RP/c67RP			1400 x 1050 pixels	
c50RX/c67RX			1024 x 768 pixels	
Lamp life, hours (median)				
100W			10,000	
120W			8,000	

Environmental Specifications

Specification	Maximum	Minimum	Typical	Notes
Temperature operating, all models	35° C 95° F	0° C 32° F	20° C +/- 3° C	All performance specifications are maintained within this temperature range.
non-operating, all models	50° C 122° F	–20° C –4° F		
Altitude (barometric pressure)	2000m			Above sea level, or equivalent barometric pressure
Humidity	80% R.H.	20% R.H.		non-condensing

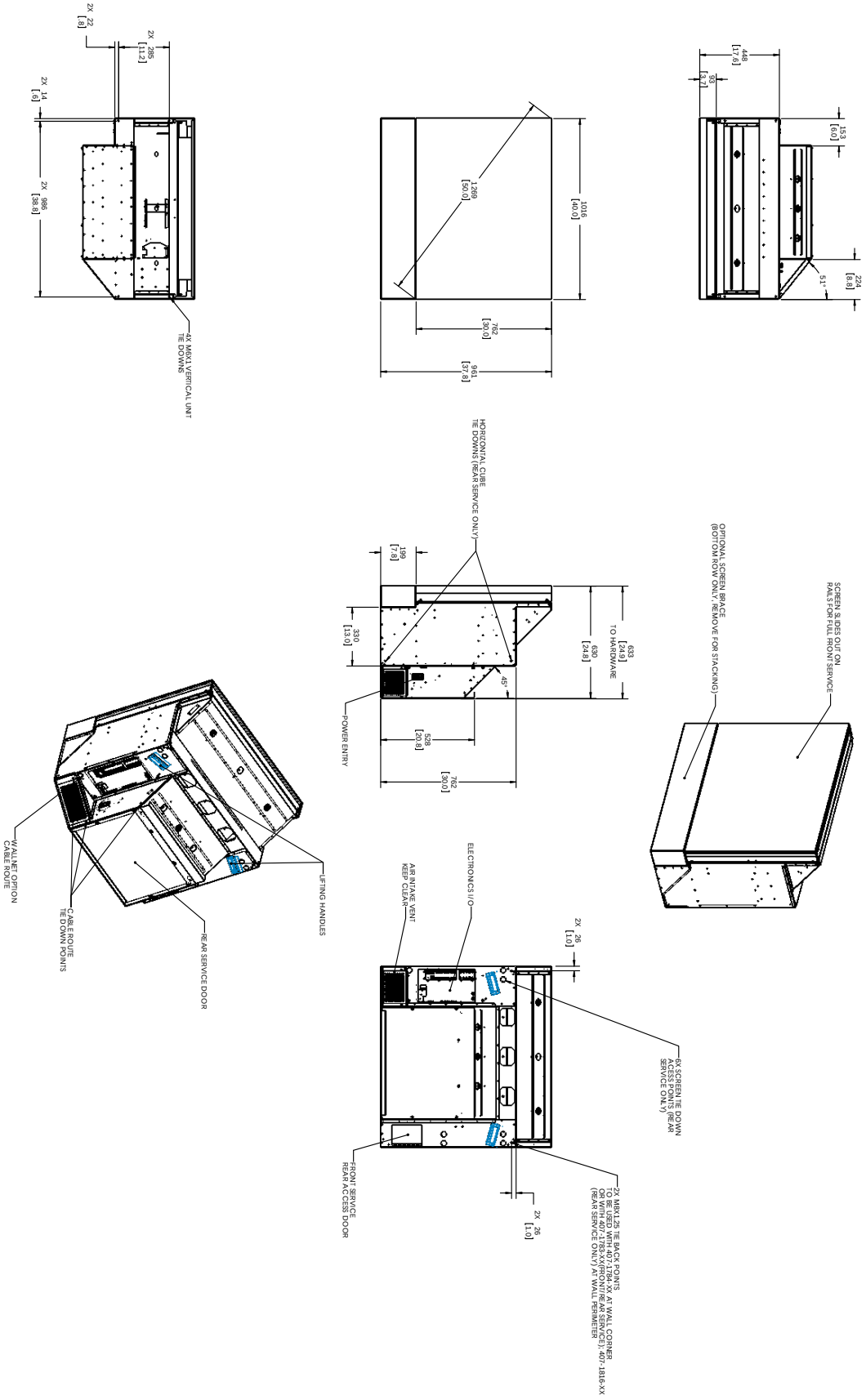
c50RP Dimensions

Dimensions shown in millimeters except where noted.



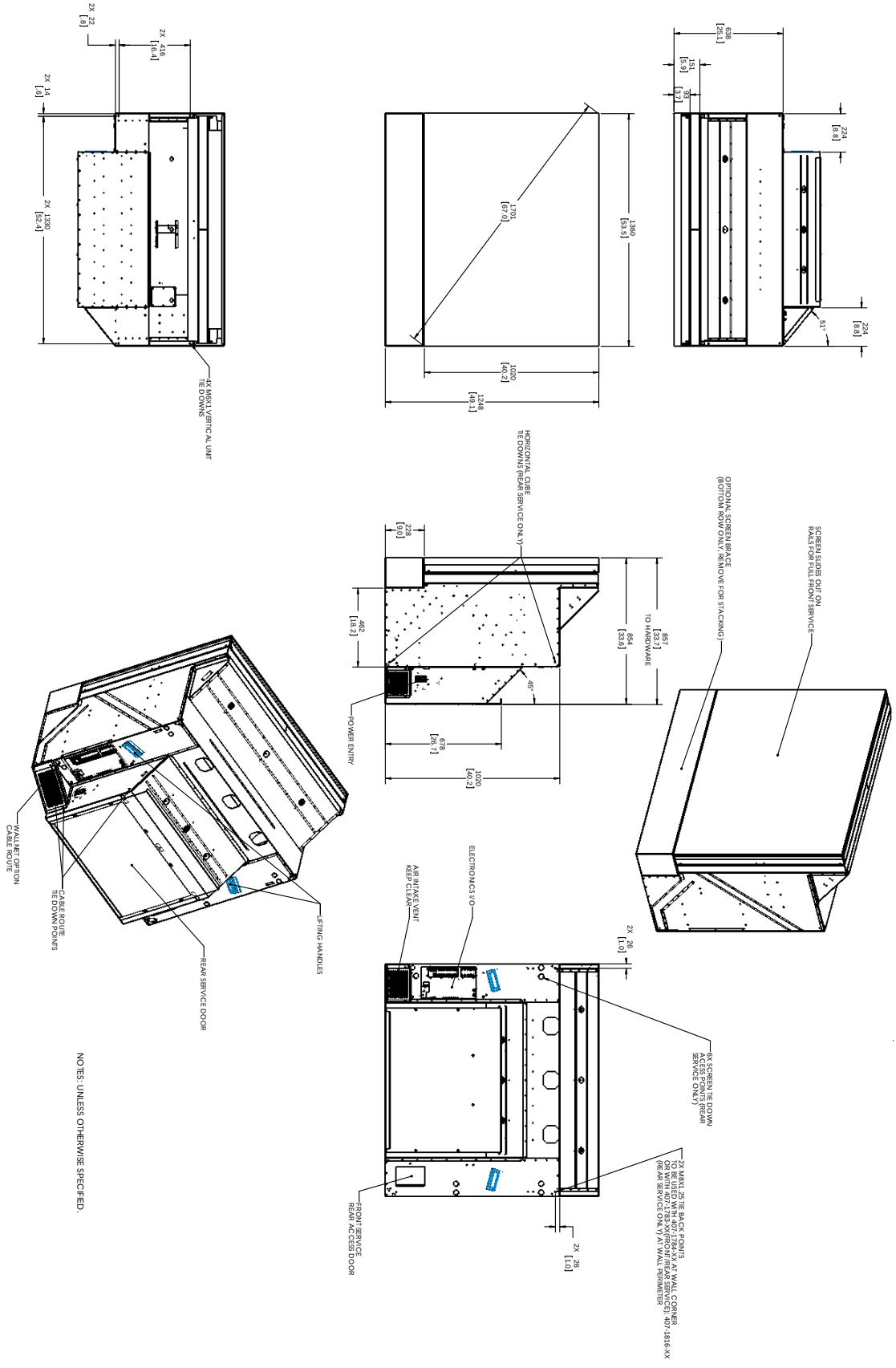
c50RX Dimensions

Dimensions shown in millimeters except where noted.



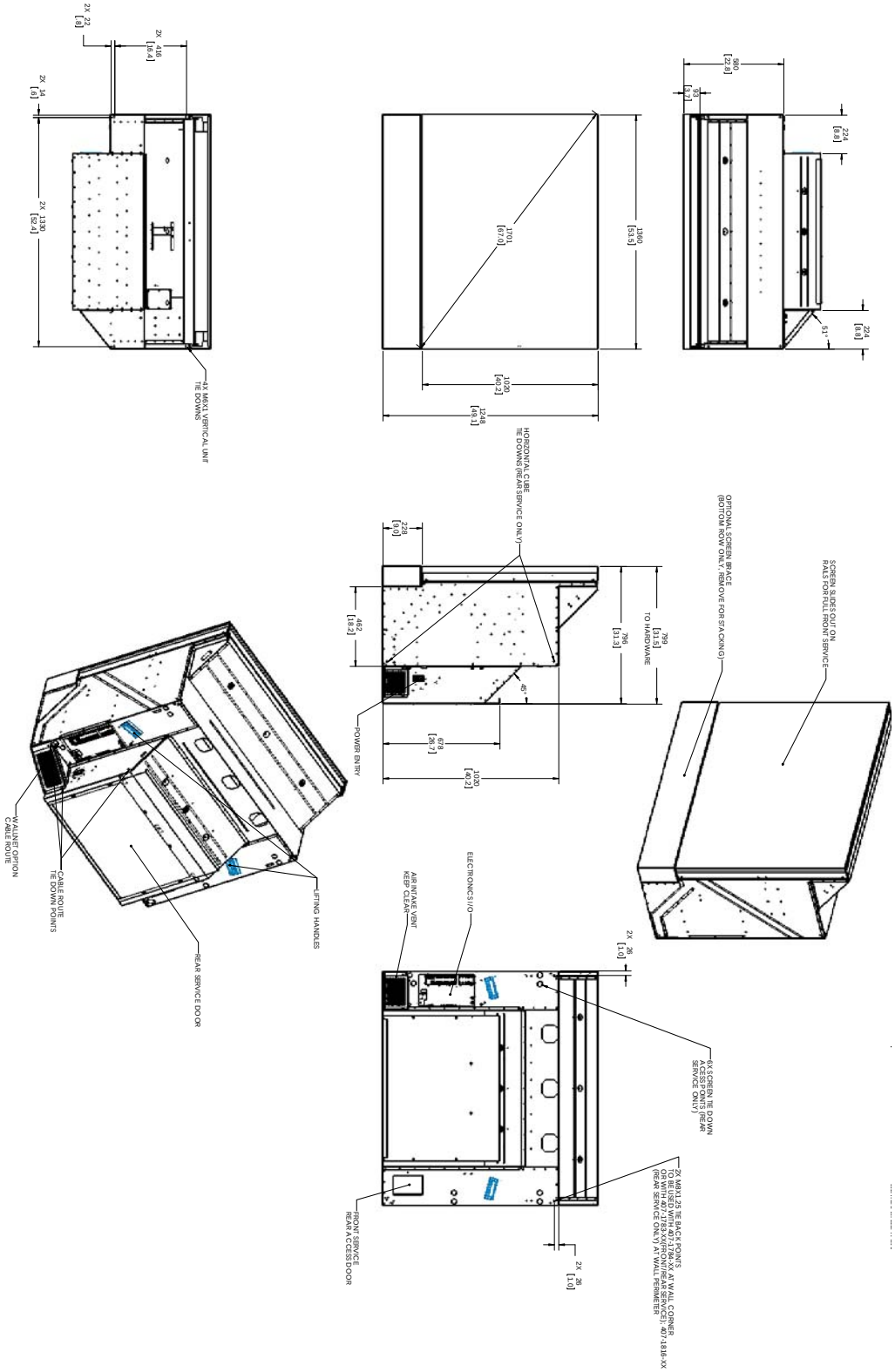
c67RP Dimensions

Dimensions shown in millimeters except where noted.


4X M6X1 VERTICAL UNIT TIE DOWNS
HORIZONTAL CUBE TIE DOWNS (REAR SERVICE ONLY)
OPTIONAL SCREEN BRACE (BOTTOM ROW ONLY. REMOVE FOR STACKING)
SCREEN SLIDES OUT ON RAILS FOR FULL FRONT SERVICE
POWER ENTRY
WALL NET OPTION CABLE ROUTE
CABLE ROUTE TIE DOWN POINTS
REAR SERVICE DOOR
LIFTING HANDLES
AIR INTAKE VENT KEEP CLEAR
ELECTRONICS I/O
8X SCREEN TIE DOWN POINTS (REAR SERVICE ONLY)
2X M8X1.25 TIE BACK POINTS TO BE USED WITH 407-1794-XX AT WALL CORNER (WITH 407-1795-XX AT INTERMEDIATE) (REAR SERVICE ONLY) AT WALL PERIMETER
FRONT SERVICE REAR ACCESS DOOR
NOTES: UNLESS OTHERWISE SPECIFIED.

c67RX Dimensions

Dimensions shown in millimeters except where noted.


4X MAX1 VERTICAL UNIT TIE DOWNS
HORIZONTAL CUBE TIE DOWNS (REAR SERVICE ONLY)
POWER ENTRY
TO HARDWARE
OPTIONAL SCREEN JIB FACE (BOTTOM ROW ONLY. REMOVE FOR STACKING)
SCREEN SLIDES OUT ON RAILS FOR FULL FRONT SERVICE
WALINE OPTION CABLE ROUTE
CABLE ROUTE TIE DOWN POINTS
LIFTING HANDLES
REAR SERVICE DOOR
AIR INTAKE VENT KEEP CLEAR
ELECTRONICS I/O
6X SCREEN TIE DOWN (REAR SERVICE ONLY)
FRONT SERVICE REAR ACCESS DOOR
2X MAX1 TIE BACK POINTS TO BE USED WITH 407-1798-XX AT WALL CORNER OR WITH 407-1793-XX(FRONT/REAR SERVICE) - 407-1818-XX (REAR SERVICE ONLY) AT WALL PERIMETER

Regulatory Information

Manufacturer's Name: Planar Systems, Inc.
Manufacturer's Address: 1195 NW Compton Drive
Beaverton, OR 97006
declares that the products
Model Numbers: c50RP/c67RP, c50RX/c67RX (DLP projection display)

conforms with the provisions of:

Council Directive 89/336/EEC and amended by 92/31/EEc and 93/68/EEC on Electromagnetic Compatibility;

EN55022:1998 Radiated and Conducted Emissions from IT Equipment

EN55024:1998 Immunity of IT Equipment

Including:	EN61000-4-2	Electrostatic Discharge
	EN61000-4-3	Radiated Immunity
	EN61000-4-4	Electrical Fast Transients
	EN61000-4-5	Line Surge
	EN61000-4-6	RF Conducted Susceptibility
	EN61000-4-8	Magnetic Field Immunity
	EN61000-4-11	Voltage Dips and Interrupts
And:	EN61000-3-2	Harmonic Current Emissions
	EN61000-3-3	Voltage fluctuations and Flicker

Council Directive 73/23/EEC and amended by M1 and C1 on Low Voltage Equipment Safety:

EN60950:2001 Safety of IT Equipment

The Technical Construction File required by this Directive is maintained at the corporate headquarters of Planar Systems, Inc., 1195 NW Compton Drive, Beaverton, OR 97006.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada (ICES-003): This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Any changes or modifications to the display not expressly approved by Planar could void the user's authority to operate this equipment.

Other Certifications

CE

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